

Chapter 8
Circulation & Mobility

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Chapter 8 Circulation & Mobility



A. Introduction

The Circulation & Mobility element is concerned with the movement of people and goods through and around the community. The element focuses on the community's system of regional or cross-town streets (arterials and collectors), local access or neighborhood streets, transit, and bicycle and pedestrian routes. The objective is to design the most effective system possible, balancing the community's various mobility needs with the character of the community. These potentially competing needs are expressed in the Rio Vista Principles, adopted through the Town Hall meetings and visioning process.

Mobility can occur in many ways. This element addresses a range of circulation issues that affect mobility, including:

- Vehicular circulation on streets and highways, including private automobiles, public transportation, and commercial vehicles.
- Vehicular parking in its relationship to travel.
- Bicycle circulation for recreation, school, and work.
- Pedestrian circulation.
- Fixed-rail circulation for passengers and goods.
- Air transportation for passengers and goods.

- Water transportation for passengers and goods—both for recreational and non-recreational purposes.

State law recognizes that circulation and land use are closely related and requires that policies contemplated by the Circulation & Mobility, Land Use, and other elements be related and consistent. The policies should demonstrate a balance between anticipated land uses and the transportation facilities that serve them. The circulation policies also must be interwoven with community character and design, economic development, housing and neighborhoods, recreation, air quality, and noise and safety policy issues.

The principal source of information that was used to obtain traffic counts, levels of service, and trip origin/destination patterns is Korve Engineering's *Highway 12 Major Investment Study and Project Study Report Equivalent* (MIS/PSR), prepared for Solano Transportation Authority in October 2001. This report is available for review at the City of Rio Vista's Community Development Department.

B. Purpose and Authority

California Government Code Section 65302(b) requires that the general plan for a city or county include a circulation element, consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, and correlated with the land use element of the plan. The circulation element has been a requirement of State planning law since 1955. The element typically serves as an infrastructure plan for the existing and proposed facilities needed to support the safe and effective circulation of people, goods, energy, water, sewage, storm drainage, and communications.

As described in Government Code Sections 65300.5 and 65302(b), circulation elements must be consistent and correlated with the land use element of the general plan. In fact, the amount, type, and location of land uses proposed in the land use plan drive the need for improvements in the circulation system. Therefore, not only should the two elements be consistent and correlated, the land use element should serve as the principal guide for estimating locally generated travel demand, which in turn helps to determine the need for circulation improvements.

While updating this General Plan, the City of Rio Vista participated with other local agencies in Solano County to develop a process for estimating and allocating future growth. City staff worked with the local jurisdictions and the Solano Transportation Authority (STA) to reach concurrence with the Association of Bay Area Governments (ABAG) on future population growth numbers

The following considerations are factored into the development of a circulation element:

- Social concerns, including how people use the circulation system to travel, who has access to various parts of the system (both physically and economically), and how the circulation system affects the daily schedule of residents' lives.
- Environmental effects, such as the air, noise, and water quality implications of the circulation system, as well as the effects of the system on people's perceptions of their neighborhood and community. Environmental issues such as air quality are discussed more thoroughly in the Resources & Conservation Management element. Noise is addressed in the Safety & Noise element.
- Economic factors involve the relationship between circulation and economic activity, as well as the costs of building and maintaining the system.
- Internal circulation issues that address movement strictly within the City – that is, movement that originates and ends within the City and the Rio Vista planning area.
- External circulation issues that address movement between Rio Vista and adjacent communities, circulation within Solano County, and regional circulation in the Bay Area and Sacramento regions. Also important are the transportation links between Rio Vista and the Sacramento, Oakland, and San Francisco airports; Bay Area Rapid Transit (BART); Amtrak; and interstate highways. These links are not directly relevant to the community's internal circulation system; however, traffic between

regions along State Route 12 (commonly referred to as Highway 12) significantly affects mobility in Rio Vista.

Not all regional or countywide issues are relevant or important to Rio Vista and not all Rio Vista issues are important to other cities in the county. Air transportation, for example, is directly relevant to the City both because a military airport is nearby and a municipal airport is located in the City's northeast corner (adjacent to the Trilogy and Brann Ranch residential areas). The proximity of Travis Air Force Base has greater implications for Fairfield, Suisun City, and Vacaville than for Rio Vista. Yet Rio Vista and Vacaville are the only cities in Solano County with general aviation airports within their jurisdictions.

C. The Rio Vista Principles: Implementing the Community Vision

Transportation facilities, particularly Highway 12, were identified as a significant concern during the community vision (Town Hall) meetings. A major vision statement and supporting principles were articulated for community circulation and mobility issues. The community vision and principles that most directly relate to the Circulation & Mobility element are listed below.

PRESERVE RIO VISTA'S SENSE OF COMMUNITY AND SMALL-TOWN CHARACTER

- ❑ *Rio Vista should still be recognizable to today's residents 30 years from now. New development should reinforce the characteristics that make Rio Vista unique. Existing neighborhoods should be examined and strengthened.*
- ❑ *The Sacramento River and related natural areas should be showcased and enhanced. These resources should be recognized as vital and essential to the community.*
- ❑ *Community identity should be strengthened with attractive entryways on Highway 12, Main Street, and River Road.*

PRESERVE AND STRENGTHEN THE DOWNTOWN, WATERFRONT, AND HISTORIC PLACES

- ❑ *The Sacramento River should be made an accessible resource for the enjoyment of Rio Vista residents and the general public.*

PRESERVE THE ENVIRONMENTAL RESOURCES THAT DEFINE RIO VISTA

- ❑ *The community should seek to connect the existing town to new developments and the Sacramento River waterfront by an extensive and interconnecting trail system. The natural drainageways, hills, and sensitive vegetation areas should be the basis for designing such a system.*
- ❑ *Adequate public facilities – sewer, water, transportation, public safety, parks, recreation, education, and others – should be in place or assured in a timely fashion before new development projects proceed.*

ENSURE EASE OF MOBILITY FOR ALL RESIDENTS, VISITORS, AND BUSINESSES

- ❑ *Accessible, easy, and convenient circulation systems for autos, pedestrians, and bicyclists alike should be designed into all new developments.*
- ❑ *Convenient and accessible truck routes for delivery and shipping of goods and services should be provided, while minimizing the impact to residential neighborhoods and sensitive districts.*
- ❑ *The development of the connecting trail system suggested by the above principles should be pursued as a key circulation facility, as well as a natural resource opportunity.*
- ❑ *Many activities of daily living should occur within walking distance of each other. This design allows independence and safe movement for those who do not drive, especially seniors and young people. Schools should be sized and located to enable children to walk or bicycle to them. Interconnected networks of streets should be designed to encourage walking and reduce the number and length of automobile trips.*

- ❑ *The needs of automobiles and pedestrians should be balanced. It is a fact of modern life that development must adequately accommodate automobiles. However, pedestrian accessibility should not be sacrificed or made less important than automobile accessibility.*
- ❑ *Streets, thoroughfares, and public spaces should be:*
 - *Safe, comfortable, attractive, and interesting to the pedestrian and motorist alike; and*
 - *Free of barriers and designed with multiple connections to various parts of the community.*

D. Setting

PLANNING AREA

The City of Rio Vista is located along the west bank of the Sacramento River in the Delta Region of northern California. Extending west into the Montezuma Hills of Solano County, the planning area covers approximately 11,255 acres. As shown in *Figure 8-1*, Highway 12 bisects the city in an east-west direction, serving as the principal connector between Interstate 80 in Fairfield and Interstate 5 in Stockton.

STREET AND ROADWAY SYSTEM

The street network continues to be the basic element of the circulation system. Streets and highways are classified according to function, described in *Table 8-1*. *Figure 8-1* shows Rio Vista's existing circulation system.

TABLE 8-1
Street Classification System

Freeway

Drivers use freeways primarily for long-distance, high speed trips. Cars can enter a freeway only at an interchange; major streets cross only at underpasses or overpasses. (Examples are Interstate 80, Interstate 680, Interstate 5, and Highway 4.)

Expressway

Drivers typically use expressways for regional trips. Other roads may cross expressways at intersections with traffic signals, or they may have underpasses or overpasses. It is usually not possible to enter an expressway from an adjacent parcel of land. Speed limits range from 45 to 60 mph. (Highway 12 through Suisun City and Fairfield is an example.)

Arterial

Drivers use arterial streets to travel to activity centers, freeways, expressways, and other arterials. Speed limits range from 35 to 45 mph. Driveways connect adjacent land uses directly; collector streets conduct traffic to the arterials. (Highway 12 in Rio Vista is an example.)

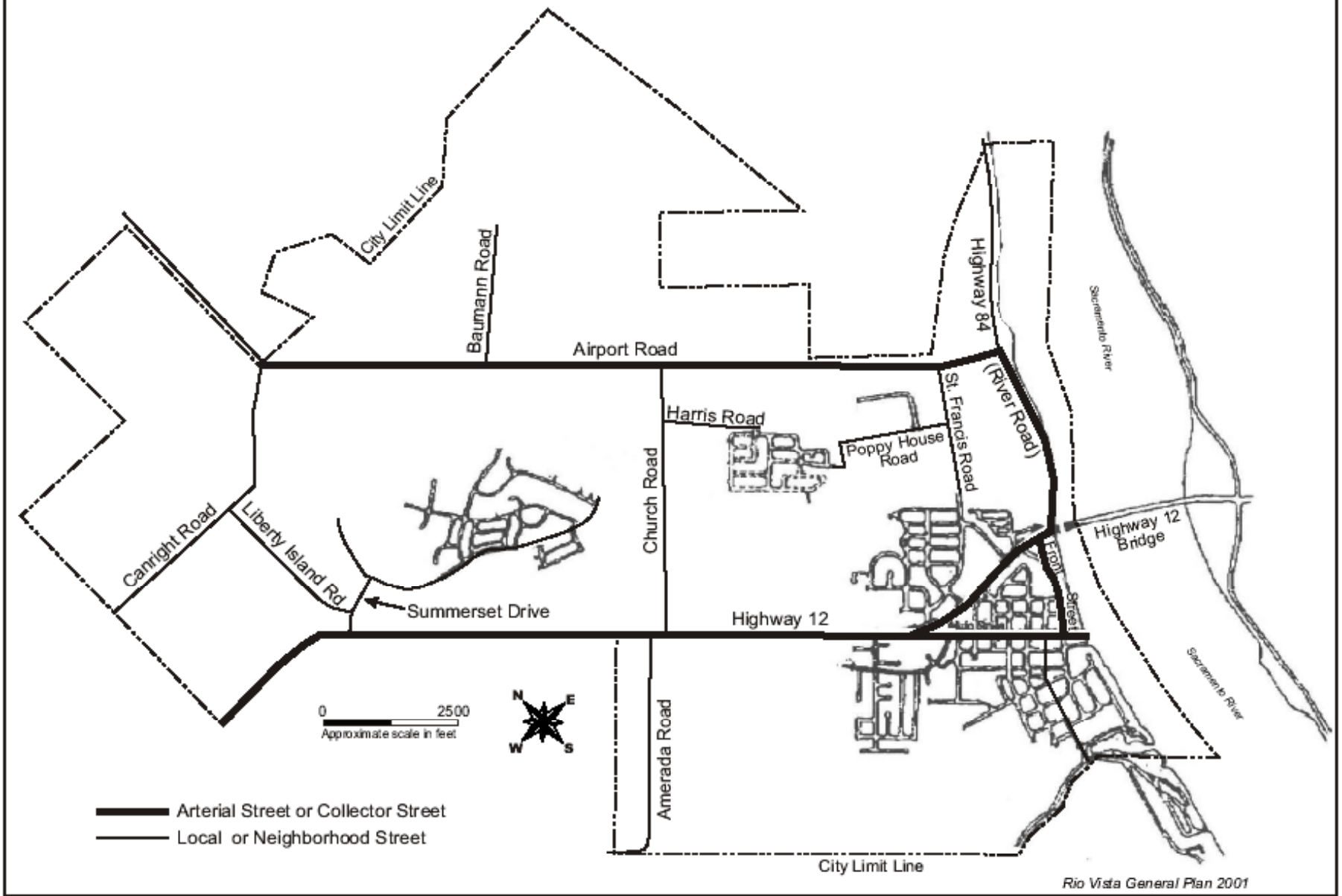
Collectors

Drivers use collector streets to travel within and between neighborhoods, as well as to access adjacent land uses. Speed limits range from 25 to 35 mph. These streets collect traffic from local streets and route traffic to arterials. (Examples are Second Street, Drouin Drive, and Sierra Drive.)

Local Roads, Residential Streets, and Alleys

Drivers travel on local roads, residential streets, and alleys only to reach adjacent land uses. Local streets are designed to protect residents from through-traffic. Speed limits are 25 mph or less. (The majority of Rio Vista's street network includes these types of streets.)

**Figure 8-1
EXISTING CIRCULATION SYSTEM**



Rio Vista General Plan 2001

The California Department of Transportation (Caltrans) controls the design, operation, and maintenance of expressways and highways, including traffic signals, on state routes such as Highway 12. Caltrans currently considers Highway 12 to be a future “expressway.” Expressways are defined as higher speed, regional roadways that allow access at more frequent points than freeways but at greater separations than local streets. All major and minor local streets are under the jurisdiction of the City of Rio Vista (the City). The street classifications are defined in *Table 8-1*. The table also identifies the local components of the City’s circulation system.

FREEWAYS

There are no freeways within the vicinity of Rio Vista. The nearest freeways are Interstate 80 located approximately 30 miles to the northwest and Interstate 5 that is approximately 25 miles to the east.

EXPRESSWAYS

There are no expressways within the Rio Vista planning area. The portion of Highway 12 that runs through Fairfield and Suisun City, approximately 15 miles west of Rio Vista, would be considered the nearest expressway.

ARTERIALS

As the only east-west route that connects Rio Vista with nearby communities, Highway 12 is the primary traffic carrier through Rio Vista. The highway serves many different users, including regional through-trips and movement of goods, inter-city travel, commute traffic, agricultural truck trips, and recreational traffic—both local and regional. Highway 12 serves as a regional circulation route, connecting Rio Vista with the City of Fairfield, the remainder of Solano County, the cities of Lodi and Stockton, and the Bay Area. Highway 12 is a two-lane highway from Lodi to Suisun City. It is developed to a four-lane expressway standard through Suisun City to Interstate 80. Current average daily traffic (ADT) is estimated at 14,000–20,000 trips in Rio Vista and over 35,000 trips in parts of Suisun City and Fairfield.

Because of the potential development that has been approved over the past decade—both north and south of Highway 12—this route serves as a major local arterial and is key to the City’s circulation system. Highway 12 connects the newly developing areas west of Church Road with the downtown historic core area and the waterfront.

Airport Road is the other arterial roadway in the City. This road runs in an east-west direction north and parallel to Highway 12, connected to it by Church Road.

COLLECTOR ROADS

Presently, nine streets in Rio Vista collect traffic from local streets and route traffic to arterials. These collectors are Main Street, River Road (State Route 84), Front Street, Second Street, Drouin Drive, Church Road, Airport Road, St. Francis Drive, and Sierra Drive.

LOCAL ROADS, RESIDENTIAL STREETS, AND ALLEYS

Except for the above arterial and collector roads, all principal streets within Rio Vista are classified as local roads. The City's downtown core has an extensive network of alleys that connect to these local roads (also called residential streets).

RIO VISTA BRIDGE

The Helen Madere Bridge (commonly known as the Rio Vista Bridge) links the Solano County and Sacramento/San Joaquin Counties portions of Highway 12. Traffic engineers consider this bridge a "gateway" to both the County and the Bay Area. As such, the bridge allows inter- and intra-regional traffic, as well as traffic between counties. For example, east Contra Costa County commuters use the bridge as a link to Solano County, while residents of Solano County (including Rio Vista) use the bridge in the opposite direction, commuting to Contra Costa County and the Central Valley. In addition, commuters and commercial truck traffic use the bridge and Highway 12 as a direct link between the Central Valley and the Bay Area.

ROADWAY OPERATIONS

Roadway operations can be described in terms of their level of service (LOS). LOS can be expressed both as a quantitative measure and a qualitative experience. The quantitative description focuses on how long drivers may need to wait to pass through an intersection or the speed at which they can travel on a street. The qualitative measure focuses on how drivers perceive their driving experience. Each LOS is assigned a letter, ranging from A (less than a 5-second wait at intersections and no restrictions on speed along arterials) to F (delays of more than 60 seconds at intersections, and "stop and go" movement on arterials). Complete LOS descriptions are provided in *Table 8-2*.

Traffic engineers use quantitative measures of LOS to help them design or reconstruct a street or intersection. The engineers take into account the volume of traffic and where it is coming from, the size and design of the arterial or intersection, signal timing, distance between cars, how aggressively people drive, and other variables. LOS normally is used to describe peak-hour conditions – the morning or afternoon hour when traffic is heaviest.

The quantitative measure of LOS can be roughly equated with drivers' perceptions of driving conditions. Drivers may experience LOS A through LOS D as "free flowing" to "easily understandable delay." LOS D is the most commonly accepted standard for urban streets. Conditions of LOS E and F typically are considered less acceptable. Perception of traffic conditions often is influenced by expectations. People expect and accept occasional heavy traffic, but not a continuous network of delays—and not throughout the day. Drivers also expect and tolerate more traffic delay in high-activity areas, such as a lively downtown, than they accept on neighborhood streets.

TABLE 8-2
Level of Service Descriptions

Service Level Category	Signalized Intersections Average Length of Wait ^a	Arterial Segments Average Speed ^b
Free flowing (LOS A)	Most vehicles do not have to stop. On the average, each driver waits less than 5 seconds to get through an intersection.	Vehicles can maneuver completely unimpeded and without restrictions on speed caused by other cars and delays at intersections. (7 a.m. on a Sunday.)
Minimal delays (LOS B)	Some vehicles have to stop, although waits are not bothersome. Average wait at intersections is from 5 to 15 seconds.	Drivers feel somewhat restricted within the traffic stream and slightly delayed at intersections. Average speed is about 70 percent of free flow. (10 a.m. on a weekday.)
Acceptable delays (LOS C)	A significant number of vehicles need to stop because of steady, high traffic volume. Still, many cars pass through without stopping. On the average, vehicles need to wait from 15 to 25 seconds to get through an intersection. (Typical conditions during midday.)	Traffic still stable, but drivers may feel restricted in their ability to change lanes. They begin to feel the tension of traffic. Delays at intersections contribute to lower average speed – about 50 percent of free flow. (Noon most weekdays.)
Tolerable delays (LOS D)	Many vehicles need to stop. Drivers are aware of heavier traffic. Some cars may need to wait through more than one red light. The average vehicle wait is from 25 to 40 seconds. (Common afternoon peak hour LOS at most “in-town” intersections.)	High traffic volumes and delays at intersections reduce average travel speeds to 40 percent of free flow. Drivers are aware of the slower pace of traffic. (4 p.m. at most intersections on a weekday.)
Significant Delays (LOS E)	Cars may need to wait through more than one red light. Long queues form, sometimes on several approaches. Average waits are from 40 to 60 seconds. (Apparent at major intersections at peak hour.)	High traffic volume and many signalized intersections with long queues reduce average travel speed to one-third of free flow. (5 – 6 p.m. on a weekday.)
Excessive Delays (LOS F)	Intersection is jammed. Many cars need to wait through more than one red light, or more than 60 seconds. Traffic may back up into “up-stream” intersections. Delay generally caused by obstruction or irregular occurrence (e.g., signal preemption for a train). This condition is often viewed as “gridlock.”	Travel is “stop and go,” one-third or one-fourth of free flow. Delay usually is caused by a “down-stream” obstruction, such as lanes reduced from 2 to 1, a stalled car, or construction activity.

Notes:

^a “Average wait” is a measure of traffic conditions at intersections. It is an estimate of the average delay for all vehicles entering the intersection in a defined period of time, for example, the evening peak hour. It is expressed as a range rather than a single value. Some drivers actually will wait more or less time than indicated by the range.

^b “Average speed” is a measure of traffic conditions on arterial streets. Average speed is based on the total time it takes to travel a certain distance, including the time spent waiting at intersections. It is determined more by traffic volume and conditions at intersections than by the legal speed limit.

Quantitative measures of LOS are useful aids to understanding the community and helping to identify potential problems with street design and impacts of land use. However, LOS ranges are theoretical. When used as a factor in determining land use capacity, they must be tempered by judgment and interpretation. Minor adjustments in signal timing, turning-lane provisions, points of access from adjoining property, and other modifications can improve the actual operation of the intersection. Given all the variables, intersections often work better than the

LOS would predict. In such cases, more detailed evaluation of driving behavior and intersection design are needed.

Korve Engineering used the Solano County Travel Demand Model (also referred to in this element as the STA Traffic Model) in a 2001 study prepared for STA (*Highway 12 Major Investment Study and Project Study Report Equivalent [Highway 12 MIS and PSR Equivalent]*). The study assessed existing roadway conditions, particularly LOS at key intersections and in roadway segments along the Highway 12 corridor, including the portion that extends from the western end of the Rio Vista planning area to the Rio Vista Bridge.

STANDARDS FOR SPECIAL AREAS

Maintaining an LOS D at all intersections is not always appropriate or necessary. People may expect and tolerate varying levels of congestion, depending on the location and time of day. In the downtown area, for example, people expect slower speeds and more traffic. It is perceived as part of the activity and vitality associated with a mixture of uses, greater pedestrian activity, and commercial and related activities. In these areas, “significant delays” (LOS E) may be acceptable. Allowing for heavy traffic in these few locations takes into consideration how people perceive congestion. However, while more traffic may be tolerated, every effort should be made to encourage people to walk once they arrive at these locations.

Highway 12 is another area where special LOS standards are appropriate. Highway 12 is included in STA’s Congestion Management Program (CMP) road system. Under CMP legislation approved in 1990, selected intersections along the designated roadways must be monitored and improved if they become worse than LOS E.

Residential neighborhoods are also areas of concern. Neighborhood traffic problems usually relate to traffic levels perceived to be heavy, speeding, or congested at specific times and locations (e.g., schools), rather than congestion levels measured by LOS only in terms of impediments to travel. These traffic problems and proposals to respond to them are addressed through the neighborhood traffic management policies discussed later in this element.

DAILY TRAFFIC COUNTS

To assess existing traffic levels in Rio Vista, the *Highway 12 MIS and PSR Equivalent* (Korve Engineering, 2001) obtained daily traffic volumes along a section of Highway 12 east of Church Road. Consultants performed weeklong, 24-hour counts along this roadway segment, where weekday traffic peaks in the morning between 7 and 9 a.m. and in the evening between 5 and 7 p.m. As shown in *Table 8-3* below, traffic volumes are approximately 8 percent higher on weekdays than on Saturdays, with a peak-hour increase of approximately 45 percent.

TABLE 8-3
Daily Traffic Count Summary

Section	Weekday		Saturday	
	Daily	Peak Hour	Daily	Peak Hour
Highway 12 east of Church Road	14,000	1,600	13,000	1,100

INTERSECTION LEVELS OF SERVICE

Three key Highway 12 intersections within the City were included in the regional study:

- Summerset Road
- Church Road
- Main Street-Hillside Terrace

Operating conditions at each of the intersections were calculated using the methodology of the Transportation Research Board's (1994) *Highway Capacity Manual*. With this methodology, an intersection LOS was assigned to describe operating conditions. The results of the intersection LOS analysis are shown in *Table 8-4*. Delay is expressed in terms of seconds per vehicle.

TABLE 8-4
**Summary of Level of Service Analysis
for Highway 12 Intersections**

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (seconds per vehicle)	Level of Service	Delay (seconds per vehicle)	Level of Service
Summerset Road	3.4	A	3.5	A
Church Road	0.4	B	0.5	B
Main Street-Hillside Terrace	2.6	C	1.3	C

While through-traffic on Highway 12 passes through the intersection of Main Street-Hillside Terrace and Highway 12 unimpeded, traffic on the minor street approaches (currently functioning at LOS E) experience difficulty crossing the highway or entering mainstream traffic at this location. This condition exists throughout the developed sections of Highway 12 in Rio Vista. During peak periods, vehicles and pedestrians experience difficulty crossing or entering Highway 12 because of the magnitude of prevailing traffic flows.

LEVELS OF SERVICE FOR LINKS AND SEGMENTS

In addition to the LOS calculations for intersections, the *Highway 12 MIS and PSR Equivalent* provided calculations for peak-hour service levels on the following links and segments in Rio Vista:

- Highway 12 west of Summerset Road
- Highway 12 west of Church Road
- Highway 12 through Rio Vista

LOS calculations for these links and segments used volume-to-capacity ratios, based on the following capacity assumptions from the *Highway Capacity Manual* (Transportation Research Board, 1994):

- A two-lane highway west of Summerset Road with 1,400 vehicles per hour per lane.
- An arterial street through Rio Vista and the Rio Vista Bridge with 900 vehicles per hour per lane.

Table 8-5 summarizes the results of the LOS analysis for links under existing conditions. Each study link was found to function at LOS A, except for the segment through Rio Vista. Currently, the existing signalized intersections function as the bottlenecks in the study corridor rather than the links between intersections.

Link	Existing Level of Service	
	AM Peak Hour	PM Peak Hour
West of Summerset Road	A	A
West of Church Road	A	A
Through Rio Vista	B	C

TRUCK TRAFFIC

Based on the most recent data from Caltrans, truck traffic along the portion of Highway 12 in Rio Vista represents approximately 14 percent of the total vehicle traffic. Although this is more than twice the percentage of truck traffic in the western portion of Highway 12, the figure is misleading. Because there are fewer vehicles traveling in Rio Vista as compared to segments farther west, truck traffic—similar in volume over all segments—becomes a higher percentage of overall traffic volume in the Rio Vista segments.

ACCIDENT DATA

The Traffic Accident Surveillance and Analysis System (TASAS), maintained by Caltrans, collected accident data on Highway 12 for the 5-year period between January 1, 1995 and December 31, 1999. The analysis involved two sections of Highway 12 that include a portion or

all of the highway through Rio Vista. The *Highway 12 MIS and PSR Equivalent* (Korve Engineering, 2001) had delineated these sections because of the distinct geometric characteristics that each possesses. For the first section, a rural two-lane highway segment from Walters Road to Drouin Drive, the observed accident rate was less than the statewide average for similar facilities; however, the second section, which extends from Drouin Drive to the Sacramento River, experienced an accident rate greater than the statewide average.

HIGHWAY 12 SAFETY TASK FORCE

The Highway 12 Safety Task Force (Task Force) was convened in October 1998 to study accident issues in the Highway 12 corridor and recommend solutions. The Task Force has been effective in identifying accident problems and causes while proactively pursuing solutions. This group identified some of the issues discussed later in this element. The Task Force is responsible for the current funding and programming of geometric improvements in an effort to reduce accidents in these areas. In addition to geometric improvements, the Task Force is responsible for the introduction of signage and increased enforcement in the Highway 12 corridor. A summary of their actions is included in their recently published *Highway 12 Safety Corridor Action Plan*.

ACCIDENT-PRONE AREAS

The following are accident-prone areas, as reported in the *Highway 12 MIS and PSR Equivalent*:

- **Summerset Road.** The intersection of Summerset Road and Highway 12 has experienced a relatively high incidence of rear-end collisions. This is the first signalized intersection for a relatively long distance on Highway 12 and lacks an advanced warning flasher.
- **Church Road.** The intersection of Church Road and Highway 12 does not provide left-turn lanes for vehicles attempting to exit Highway 12, and inadequate acceleration and deceleration distances are provided on Highway 12 for right-turning vehicles. This configuration has resulted in a relatively high number of both injury and non-injury accidents.
- **Hillside Terrace.** A large number of broadside and rear-end collisions have happened at this location over the last 5 years. In addition, side-street traffic may experience difficulty accessing or crossing the mainline traffic flow during peak-traffic periods.
- **Rio Vista.** A relatively high number of auto and pedestrian collisions have occurred on Highway 12 through Rio Vista. These accidents likely occur because of the combination of poorly defined areas for pedestrians to cross Highway 12 in Rio Vista and the high speeds and heavy volumes of traffic. Highway 12 often acts as a barrier between the two “halves” of Rio Vista that it bisects, and pedestrian crossings are particularly hazardous. The highway is a high-speed, two-lane roadway that lacks pedestrian access, turn lanes, and road shoulders. The existing commercial uses adjacent to the highway lack traffic or turn-movement controls and, in numerous locations, pedestrian crossings and sidewalks. Sidewalk access for pedestrians with impaired mobility is virtually non-existent.

In recent years, agencies besides Caltrans (in particular, the Highway 12 Safety Task Force) have studied in detail a number of these accident-related problems and suggested solutions. As a result, solutions to some of these problems are now funded. The status of these improvements is included in *Table 8-6*.

TABLE 8-6
Current Status of Recommended Solutions for Accident-Prone Areas

Accident-Prone Area	Recommended Solution	Funding Status
Summerset Road	Install advanced warning flashers	Unknown
Church Road	Install left-turn lanes and acceleration/deceleration lanes for right turns	Being sought
Hillside Terrace	Install traffic signal	Currently programmed
Rio Vista	Install signalized/lighted crosswalk at Gardiner/Highway 12	Funded

ROADWAY CONDITIONS

Although the street system is functioning adequately from an operational standpoint, some roads are in need of repair. Portions of the older neighborhoods and the downtown, including Main and Front Streets, have been identified as high priorities for repairs. The City has been successful in procuring funds through STA and the Metropolitan Transportation Commission (MTC) for overlays and reconstruction of parts of Main and Front Streets. Funding sources are being sought on an ongoing basis for other streets in deteriorating condition.

As described earlier, Highway 12 is a high-speed, two-lane roadway that lacks pedestrian access, turn lanes, and road shoulders. In addition, the existing commercial uses adjacent to the highway lack landscaping, traffic- or turn-movement controls, pedestrian crossings, and sidewalks in numerous locations. Although the highway is the City's frontage and is near the historic downtown, few linkages exist between the downtown residential and commercial uses and the highway commercial "strip" alongside Highway 12.

The environmental and aesthetic character of the Highway 12 corridor varies in different places throughout the City. From the west, the character is still largely rural passing the city limits, then rural on the south frontage and rural-suburban on the north frontage next to Summerset Road. After Church Road, the highway passes through the hills and drainageway valleys and ravines of the River Walk and Esperson properties. From Drouin Drive to the Rio Vista Bridge, the existing highway commercial district dominates both sides of Highway 12.

TRANSIT SYSTEM

Transit refers not only to buses and rail systems moving large numbers of people over fixed routes but also to carpools and vanpools of commuters traveling daily to a common destination. Recently, new regional transit routes were initiated from the Fairfield-Suisun area. These include buses to BART and Citylink service to Vacaville. Passenger train service is offered by Amtrak, with trains stopping at the Suisun-Fairfield Station.

Rio Vista operates an on-demand bus system sometimes referred to as “dial-a-ride.” A single nine-passenger bus is owned and operated by the City of Rio Vista. The bus responds to individual calls for service and connects Rio Vista residents to Suisun City-Fairfield, Antioch, Lodi-Stockton, the Amtrak station in Suisun City, and the Solano Mall. Dial-a-ride also services other destinations in Fairfield and Vacaville, such as Kaiser and North Bay hospitals and clinics, county services, and other commercial destinations.

RAIL SERVICE

CAPITOL CORRIDOR SERVICE

Amtrak’s Capital Corridor inter-city rail service provides six trains daily for each direction between San Jose and Sacramento, with stops in the East Bay, Solano County (Suisun City), and Davis, and connections to downtown San Francisco and Oakland. Longer route service is available from Suisun City and Davis to Chicago and Seattle. Although the Capitol Corridor service includes two trains at commute hours, the service primarily targets the occasional inter-city traveler, rather than daily commuters. A future station is planned in Fairfield near Travis Air Force Base and south Vacaville. The station in Suisun City (Suisun-Fairfield Station) is adjacent to Highway 12—about 20 miles from Rio Vista—and is the most direct connection for Rio Vista residents.

LIGHT RAIL (BAY AREA RAPID TRANSIT)

For travelers and commuters to choose Amtrak or BART over their own cars, they must be able to access rail stations easily and travel to their destination with minimal wait times. Parking must be readily available for cars and bicycles, and transit bus schedules must be carefully coordinated with improved rail service.

Currently, the most direct connection to BART from Rio Vista is the Bay Point Station in Pittsburgh adjacent to Highway 4. This station is about 25 miles from Rio Vista and requires travel on one of the major Bay Area commuter routes (Highway 4) through Antioch and Pittsburgh. No plans exist for a bus connection from Rio Vista. The BART station in El Cerrito is about 45 miles away and is available through a regional bus connection from Amtrak’s Suisun-Fairfield Station. In the future, it may be possible to use either the dial-a-ride system or a regular fixed-route connection from Rio Vista to the Suisun-Fairfield Station or to the Bay View Station. The Suisun City bus also connects to the Vallejo ferry terminal.

TRANSIT FOR THE MOBILITY-IMPAIRED

A number of people in Solano County cannot use conventional public transportation because of a physical or mental disability. Many of these individuals are elderly, while others use wheelchairs or have other limitations to their mobility. As with transit for Rio Vista residents in general, transit for the mobility-impaired also is limited. The City’s paratransit services offer alternative transportation for some mobility-impaired residents.

People who cannot use conventional, fixed-route transit need specialized services—called “paratransit.” The CAC provides a paratransit service to residents of Rio Vista. Seniors and disabled people of any age who have no other means of transportation may use the service for a small fee. The service operates on weekdays between 8:30 a.m. and 5 p.m. by reservation. Most trips are for medical purposes; and most riders are seniors, persons who cannot drive, or lower income residents.

PRIVATE TRANSPORTATION SERVICES

Some specialized transportation needs can best be met by the private sector. These include shuttle buses that serve limited routes during peak-travel periods and taxi services. Travel corridors between residential areas, downtown, and shopping centers may benefit from shuttle services. Trilogy or other large developments may create such services for their residents as growth occurs. Furthermore, although taxi fares are higher than other forms of transportation, the service fulfills more personalized needs.

BICYCLE NETWORK

Until about 30 years ago, people rode bicycles primarily for recreation and children comprised the greatest percentage of cyclists. With an increased awareness of physical fitness, the relatively low cost of cycling versus motor vehicle travel, and environmental benefits (e.g., reduced air pollution), bicycling has risen in popularity. Adults now represent the majority of all cyclists. Recreational biking, children bicycling to school, bicycle-to-transit trips, and other utilitarian trips are an integral component of the community's travel patterns.

Consequently, bicycle pathways have become a key element of the transportation system. A consistent bicycle network can help to ensure safety, accessibility, and quality of life in the community.

The mild climate and predominately flat topography of the Delta and Solano County are conducive to cycling. Bicycle activity is limited in the City of Rio Vista, however, with the focus primarily on recreation. This is largely due to the lack of a bicycle network—bicycle paths in Rio Vista are limited to a single bicycle lane on Poppy House Road and along Highway 12. Because Rio Vista is bisected by Highway 12, this heavily used roadway acts as a hazardous physical barrier to both pedestrians and bicyclists.

The most commonly used bikeway design standards are contained in the *Caltrans Highway Design Manual*. Table 8-7 shows the three types of bicycle route standards and their functions. STA recently updated its *Solano Countywide Bicycle Plan* (Alta Transportation Consulting, 2000), which designated a Class II bicycle route along Highway 12 through Rio Vista. However, without separated bicycle paths or sufficient shoulder width for dedicated bicycle lanes, cyclists are forced to share the roadway with motor vehicles, which affects both roadway operation and safety.

TABLE 8-7
California Department of Transportation's Bicycle Route Standards

Class I Route

Off-street pathways. These pathways are entirely separated from street traffic (at least several feet from curb) with 4 feet per lane on two-way facilities. If combined with pedestrian use, an additional 2-4 feet in width is necessary. This type of route also may be removed entirely from the street network. Preferred locations are in natural and scenic areas in the major trails and pathways shown in *Figure 8-4* and within the rights-of-way or adjacent to heavily traveled streets.

Class II Route

Striped, separate lane on the street surface. The minimum width is 6 feet from the face of curbs on each side of the street or a 4-foot striped lane on the inside of the parking area, where on-street parking is allowed. (NOTE: Some communities adopt a standard for the striped lane to the outside of the parking area and vary the required lane width.) This typically occurs on a collector or arterial street, where there is greater roadway width and higher vehicular traffic volume. Striping also is appropriate on local streets that provide connections to destinations such as schools, commercial centers, and the waterfront.

Class III Route

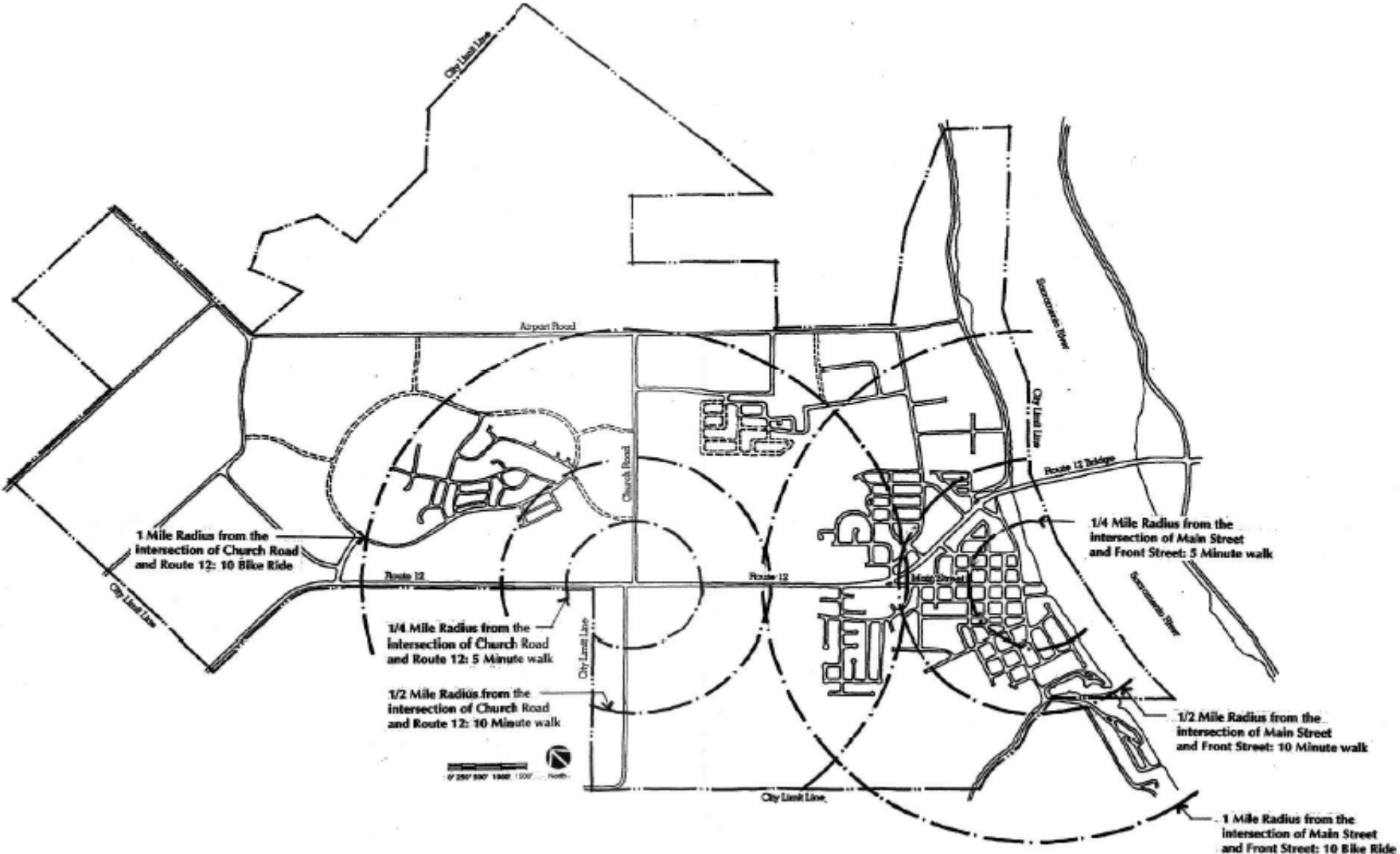
Signed routes along local streets. These routes are established where a path or lane is not feasible along through-traffic routes or local streets likely to be used by bicyclists where a path or lane is not feasible. They alert motorists to the likelihood of bicyclists sharing the roadway. These routes also may indicate a preferred route for bicyclists to use, such as a direct route to a school. Class III routes are established by placing bicycle route signs along the roadway.

PEDESTRIAN NETWORK

Pedestrian traffic in the city continues to be generated primarily by children; however, many adults walk for pleasure. In addition, persons operating wheelchairs are considered pedestrians. Walking can be a convenient means of short-distance travel. Where development maintains a pedestrian-oriented environment and locates destinations within a 5- to 10-minute ($\frac{1}{4}$ - to $\frac{1}{2}$ -mile) walking distance, many short-distance automobile trips can be eliminated. *Figure 8-2* shows the existing $\frac{1}{4}$ - and $\frac{1}{2}$ -mile radii around the downtown, the Highway 12 commercial district, and the intersection of Highway 12 and Church Road.

Sidewalks. Most streets in Rio Vista have sidewalks on both sides, consistent with existing City standards. The exception is the private street system in the Trilogy project that is restricted to seniors and oriented around a golf course and a number of recreation centers. There are gaps in some sidewalks, particularly on Highway 12, River Road/State Route 84 and the industrial districts. In addition to safety considerations, continuous and unobstructed sidewalks encourage their use by pedestrians.

**Figure 8-2
WALKING DISTANCE MAP**



Rio Vista General Plan 2001

E. Outlook

NATIONAL, STATE, AND REGIONAL TRENDS

In the past decade, the State and Solano County have become more involved in transportation improvement projects. Voters have been more willing to approve additional taxes for transportation. Air quality legislation has played an increasingly major role as there is a growing awareness of the significant effect of congestion on the region's environmental, economic, and social well-being.

Traffic, congestion, and related issues (e.g., "urban sprawl") continue to be identified as the Bay Area's most significant problem by respondents to an annual poll conducted by the Bay Area Council. The Sacramento region is experiencing a similar awareness of the problem.

Several significant trends affect the problem:

- **People are driving more.** Vehicle miles of travel—a standard measure of travel demand—and vehicle registrations, have increased much faster than employment or population.
- **Land and housing costs continue to increase.** Increased land and housing costs are forcing new housing development further into outlying areas, which requires people to make longer commute trips. Solano, San Joaquin, south Sacramento, and east Contra Costa Counties continue to host "bedroom communities" where many residents commute for up to 2 hours in each direction—predominantly in single-occupancy autos.
- **The number of employed persons per household has increased.** Households earn more, own more cars, and make more commute trips. As a result, people now tend to run errands, shop, and transport their children at peak hours, rather than during the day.
- **Telecommuting does not represent a large portion of employment.** Telecommuting (in-home business and office work made possible by technological advances), is a growing alternative but has not yet resulted in a significant decline in regional congestion.
- **Facilities are becoming consolidated and outside walking distances.** Increasingly, school, park, retail, and civic opportunities are located in larger "centers" or consolidated facilities that are located further from the typical neighborhood residence and usually outside walking distance (more than ¼- to ½-mile radii).
- **Pedestrian and bicycle access is limited or not part of the design.** Although some multiple uses or functions are located relatively close to one another, often they are separated by major streets, walls, or inhospitable environments (e.g., large parking lots), with no access or connections conducive to walking. Thus, by design, people are discouraged from using anything but an automobile—even for short-distance trips that are within typical walking or biking distances.

CIRCULATION AND MOBILITY CONSIDERATIONS

There is a growing recognition that transportation facilities should be designed to serve all members of the community: children, seniors, the handicapped, and those who depend on automobiles, buses, or other means of transportation for mobility. Mobility is essential to personal, neighborhood, and community growth and opportunity. The following section discusses the central issues and problem-solving approaches for circulation and mobility in Rio Vista and the surrounding region.

REGIONAL TRANSPORTATION PATTERNS

The growth in traffic is a regional problem closely tied to the pattern of land use that has evolved in the Bay Area and Sacramento regions. Since 1970, job growth has been concentrated in the inner Bay Area counties and in Sacramento and Placer Counties in the Sacramento region. Highway 12 in Rio Vista also is affected by traffic from San Joaquin County, particularly the Lodi and Stockton areas. A large percentage of Solano County's residents commute to jobs outside the county. According to the 1990 Census, 43 percent of people living in Rio Vista work outside the community, with 27 percent working outside Solano County, mostly in the Bay Area and the Sacramento region.

The *Highway 12 MIS and PSR Equivalent* (Korve Engineering, 2001) provides a regional look at land uses and transportation patterns. Using the STA Traffic Model, the study indicates that approximately 60 percent of traffic at the Rio Vista Bridge has an origin or destination within Rio Vista. The remaining 40 percent represents traffic traveling through the area on Highway 12; a substantial amount of this percentage is traveling between Rio Vista and the Fairfield-Suisun City area.

TRAFFIC CONGESTION

Resolving traffic congestion issues is a problem that requires the cooperative efforts of many agencies. Land use, community character, and transportation are closely interconnected. These components must be carefully balanced as the city and the region continue to evolve.

Single-passenger autos have strained the regional transportation system to its limits. A greater emphasis must be placed on alternatives, such as ridesharing, bus, rail and water transit, and—particularly for shorter trips for daily activities near home—bicycling and walking.

AIR QUALITY ISSUES

Air pollution is a major regional issue that has been firmly linked to transportation—cars cause more than half of all air pollution in California. In the Bay Area, auto exhaust is responsible for over 80 percent of carbon monoxide; approximately 70 percent of visible particles, which are called particulates; over 50 percent of nitrogen oxide, which causes “brown haze”; and over 40

percent of hydrocarbons. The Resource Conservation & Management element of this General Plan discusses air quality attainment status, impacts, and improvement measures.

Strict emission-control standards have improved auto emissions since the 1960s, but air quality will be worse in the future because people are driving more. The California Clean Air Act was passed in 1988 to address this issue. The Act established strict new air quality standards and gave Regional Air Quality Districts new powers to achieve them. These powers include

developing and carrying out Transportation Control Measures (TCMs). TCMs are aimed at curtailing the use of cars through employer-based trip reduction, land use policies, and special fees tied to vehicle use. The impacts of auto use on air quality will continue to shape regional, state, and federal transportation policies over the next 20 years.

PEDESTRIAN AND BICYCLE ACTIVITY

Safety is the primary concern for Rio Vista residents with regard to travel within the City. A consistent bicycle network with either bicycle lanes or wider curb lanes is needed to increase safe access for bicyclists and pedestrians to work, school, recreation, retail, and other destinations. Such a system will create a more sustainable environment by reducing traffic congestion, vehicle exhaust emissions, noise, and energy consumption. These considerations have become increasingly important as Rio Vista plans for the significant anticipated growth of this community.

The *Solano Countywide Bicycle Plan* (Alta Transportation Consulting, 2000) recently was adopted to encourage the development of a unified bicycle system throughout Solano County with connections to other regional bicycle and pedestrian systems. This update to its 1995 plan recommends, as one of the primary system links, some Class II shoulder improvements in conjunction with Highway 12 improvements in Rio Vista. The City will integrate the County's bicycle plan with the City's plans for trails and pathways, as described later in this section's discussion of future circulation improvements.

TRANSIT DEMAND AND USAGE

The same land use and design considerations that influence pedestrian and bicycle activity equally affect transit demand and usage. Logical transit routes and potential locations for fixed stops (e.g., Highway 12 and the commercial area at Church Road and Highway 12) must be easily accessible (i.e., within ¼- to ½-mile radii) to as many people as possible. Both land use mix and density are important to enhancing transit demand and usage. A mix of complementary uses within a short distance of a transit stop enables a rider to accomplish more than one errand or task with one stop (similar to being able to accomplish several purposes with a single vehicle trip). Conversely, single uses force the transit rider to take several rides or trips to different destinations in order to accomplish more than one errand or task, which yields transit inconvenient and a mode of last resort. Density has a similar impact; the higher the residential density or intensity of nonresidential use, the more people and destinations are accessible with a single ride or vehicle trip. To encourage use, transit stops also must be designed to provide easy and direct pedestrian connections within walking distance.

ENVIRONMENTAL DESIGN

Appropriate design that balances auto and pedestrian uses can enhance transportation facilities and make them an asset to the community and neighborhood. Generous landscaping, buffers, and related design features can insulate the community from noise and air pollution caused by transportation. Minimizing noise, traffic, and air pollution and maintaining visual aesthetics should be key objectives in transportation planning. Noise-reduction measures also can be incorporated into the design and construction of new buildings, as described in the Safety & Noise element of this General Plan.

Some communities create special design requirements for streets as a technique to improve the appearance of roads and better integrate them into the community. Major streets that pass

through residential neighborhoods carry traffic in the same way as other streets, but design elements can screen sidewalks and front yards from the sights and sounds of heavy traffic, slow the speed of vehicles, and narrow the streets—either physically or by appearance. Additionally, reduction of the impervious surfaces of streets and sidewalks helps meet current and future storm water quality requirements. These elements include:

- Reducing curb-to-curb pavement widths where performance standards for garage placement, projected traffic, and parking restrictions are used.
- Installing planter strips between streets and sidewalks.
- Screening cars parked at the curb from residences.
- Planting larger trees closer together between curb and sidewalk.

LAND USE AND GROWTH PROJECTIONS

Developing an understanding of future circulation needs begins with establishing land use and population growth assumptions. This section summarizes both the process for developing these assumptions, as well as the subsequent data evaluation. These were the basis for determining the need for improvements and developing the City’s proposed circulation system.

EXISTING LAND USE DATA

The existing land uses in Rio Vista are primarily comprised of residential, commercial, and industrial uses. The *Highway 12 MIS and PSR Equivalent* (Korve Engineering, 2001) uses future land use forecasts from ABAG; general planning information from Rio Vista, Suisun City, Fairfield and other Solano County jurisdictions; and the STA traffic model (travel demand model) develop its traffic projections. *Table 8-8* provides a summary of existing (2000) and future (2025) land use forecasts within the Rio Vista planning area. For the model, 2025 is the forecast year. The land use assumptions for 2025 in the model are the same as the 2020 population and land use map adopted by this General Plan. The model therefore is consistent with both the Land Use element and the limitations the urban growth boundary (UGB) (adopted as delineated in *Figure 3-1* of the Development Constraints & Boundaries element) place on future annexation.

TABLE 8-8

Land Use Summary

Roadway Segment	Residential 2000 (dwelling units)	Residential 2025 (dwelling units)	Change (%)	Commercial 2000 (sq. ft.)	Commercial 2025 (sq. ft.)	Change (%)
North of Highway 12	1,111	8,193	637.4	569,900	4,028,000	606.8
South of Highway 12	564	1,437	154.8	70,500	146,000	107.1

Source: Korve Engineering, 2001.

The City anticipates substantial land use changes in Rio Vista over the next 25 years as shown in Table 8-8 above. In this summary, commercial space includes retail, office, and industrial development. (Note: Korve's land use figures vary somewhat from those used in the rest of this General Plan due to minor differences in Korve's study area boundaries and the use of slightly less current population and housing data to generate the STA traffic model.)

MONITORING LAND USE AND TRANSPORTATION – THE STA TRAFFIC MODEL

The location and intensity of development directly affect traffic levels in the surrounding area and the community as a whole. Transportation engineers have developed several mathematical tools to monitor the relationship between land use and the transportation system. One tool is the traffic-forecasting model. The model forecasts traffic volumes and conditions under future land use scenarios. It is based on estimates of how much traffic will be generated by new development, what streets are available for the traffic to use, and the amount of new traffic the street system can accommodate. This evaluation also can be performed during the development review process in order to help determine types and intensities of land use, as well as suitable mitigation measures.

The STA traffic model forecasts traffic countywide and takes into consideration land use projections for every Solano County jurisdiction, as well as surrounding counties and regions. The model generates a picture of future local and through-traffic, which provides an estimate of future demand from outside Rio Vista. This identifies where forces outside the community's control may affect the Rio Vista Bridge and Highway 12.

TRAFFIC FORECASTS FOR 2010 AND 2025

The *Highway 12 MIS and PSR Equivalent* (Korve Engineering, 2001) forecasts circulation needs and identifies the physical improvements and management practices necessary to appropriately serve future travel demand. The study corridor covered the portion of Highway 12 between Interstate 80 and the Rio Vista Bridge, and examined traffic movement west of Summerset Drive, west of Church Road (including the Church Road intersection), and the Highway 12 segment through Rio Vista.

The STA Traffic Model evaluates future traffic levels and forecasts traffic conditions at the same three study intersections and roadway segments shown in *Tables 8-4 and 8-5*. Near-term traffic projections for 2010 assumed a linear growth in traffic from existing levels to those levels projected for 2025.

Except for the portion through downtown Rio Vista, the Highway 12 corridor currently does not experience regular periods of congestion and delay; however, travel demand forecasts predict that traffic will more than double over the next 20 years. The STA bases its conclusions and recommendations primarily on LOS calculations at the key intersections and link and roadway segments for 2010 and 2025.

INTERSECTION LEVELS OF SERVICE FOR 2010 AND 2025

Table 8-9 presents the results of the LOS analysis at the three study intersections. Except for a traffic signal to be installed at the intersection of Highway 12 and Main Street-Hillside Terrace, the analysis assumes no roadway improvements. Results show that the identified near-term

operational movements would result in acceptable operating conditions in 2010. By 2025, however, unacceptable conditions would prevail at the Church Road intersection.

TABLE 8-9

**Summary of Level of Service Analysis
for Highway 12 Intersections
(without Improvements)**

Intersection	Level of Service			
	Existing Conditions		2010 PM Peak	2025 PM Peak
	AM Peak	PM Peak		
Summerset Road	A	A	A	B
Church Road	B	B	C	F
Main Street-Hillside Terrace	C	C	B ^a	B ^a

Notes:
^a Based on the assumption that a traffic signal will be installed at the Main Street-Hillside Terrace intersection.

LINK LEVELS OF SERVICE FOR 2010 AND 2025

In addition to the intersection LOS calculations, the STA Traffic Model forecasted traffic volume and LOS analysis for three highway links and segments in Rio Vista. *Table 8-10* presents the results of the LOS analysis at the three study intersections, which assume no roadway improvements. By 2025, unacceptable conditions would prevail on the sections of Highway 12 west of Church Road and through Rio Vista.

TABLE 8-10

**Summary of Level of Service Analysis
for Highway 12 Links and Roadway Segments
(without improvements)**

Link or Roadway Segment	Level of Service			
	Existing Conditions		2010 PM Peak	2025 PM Peak
	AM Peak	PM Peak		
West of Summerset	A	A	A	D
West of Church Road	A	A	B	F
Through Rio Vista	B	C	D	F

Note:
 The analysis is based on the assumption that no road improvements will occur.

RIO VISTA BRIDGE

The Rio Vista Bridge over the Sacramento River is a two-lane, twin-tower drawbridge that raises the bridge deck in order to allow water traffic to pass. Bridge operations periodically create significant delays, stopping traffic for several minutes at a time while water traffic is passing. The bridge is a key facility for Rio Vista residents. The STA Traffic Model shows that 43 percent of current traffic on the bridge originates or ends in Rio Vista (Rio Vista traffic), while about 57 percent is traffic passing through—neither originating or stopping in Rio Vista (through-traffic). The model projects a similar proportion throughout the General Plan buildout; the percentages change only slightly by 2020, to 45 percent Rio Vista traffic and 55 percent through-traffic.

The main concern with the bridge is the limitation of its two-lane capacity. The STA Traffic Model shows the bridge falling to LOS E at peak hours by 2010 (50 percent buildout), although only one segment of Highway 12 is projected to require four lanes at the same time. (The model calculates the delays caused by water traffic by treating the bridge as a city street, with traffic signals rather than the drawbridge delays.) The model estimates the capacity of the Rio Vista Bridge with its existing configuration to be approximately 900 vehicles per hour per direction (approximately 18,000 ADT). Long-term (2025) traffic projections indicate that additional capacity for crossing the Sacramento River may be necessary.

TRAFFIC AND CIRCULATION MANAGEMENT

The need to improve roadway and parking facilities will be carefully balanced with the need to control traffic congestion. Unrestricted expansion of roadways and parking would undermine attempts to promote the use of alternative means of transportation. The long-term economic and social health of Rio Vista depends on favorable traffic conditions, which can be maintained only through a balanced transportation system.

The regional study showed that Transportation Demand Management (TDM) improvements such as carpooling and local shuttle and transit service, would not be sufficient to noticeably improve operating conditions along Highway 12. Safety improvements at Church Road and Summerset Drive and near-term traffic improvements to Highway 12 outside the City would improve conditions in the short term. However, traffic improvements that include widening Highway 12 from Summerset Road to River Road, installing a traffic signal at Church Road, and improving the Rio Vista Bridge likely would be needed in the long-term to serve future traffic volumes.

The City has considered the alternatives from the *Highway 12 MIS and PSR Equivalent* (Korve Engineering, 2001) to develop policies and implementing actions that will improve circulation through the city during the time frame of this General Plan. The map in *Figure 8-3* illustrates the proposed circulation system and reflects the findings of the regional study, in addition to other anticipated needs.

STREET AND ROADWAY SYSTEM NEEDS

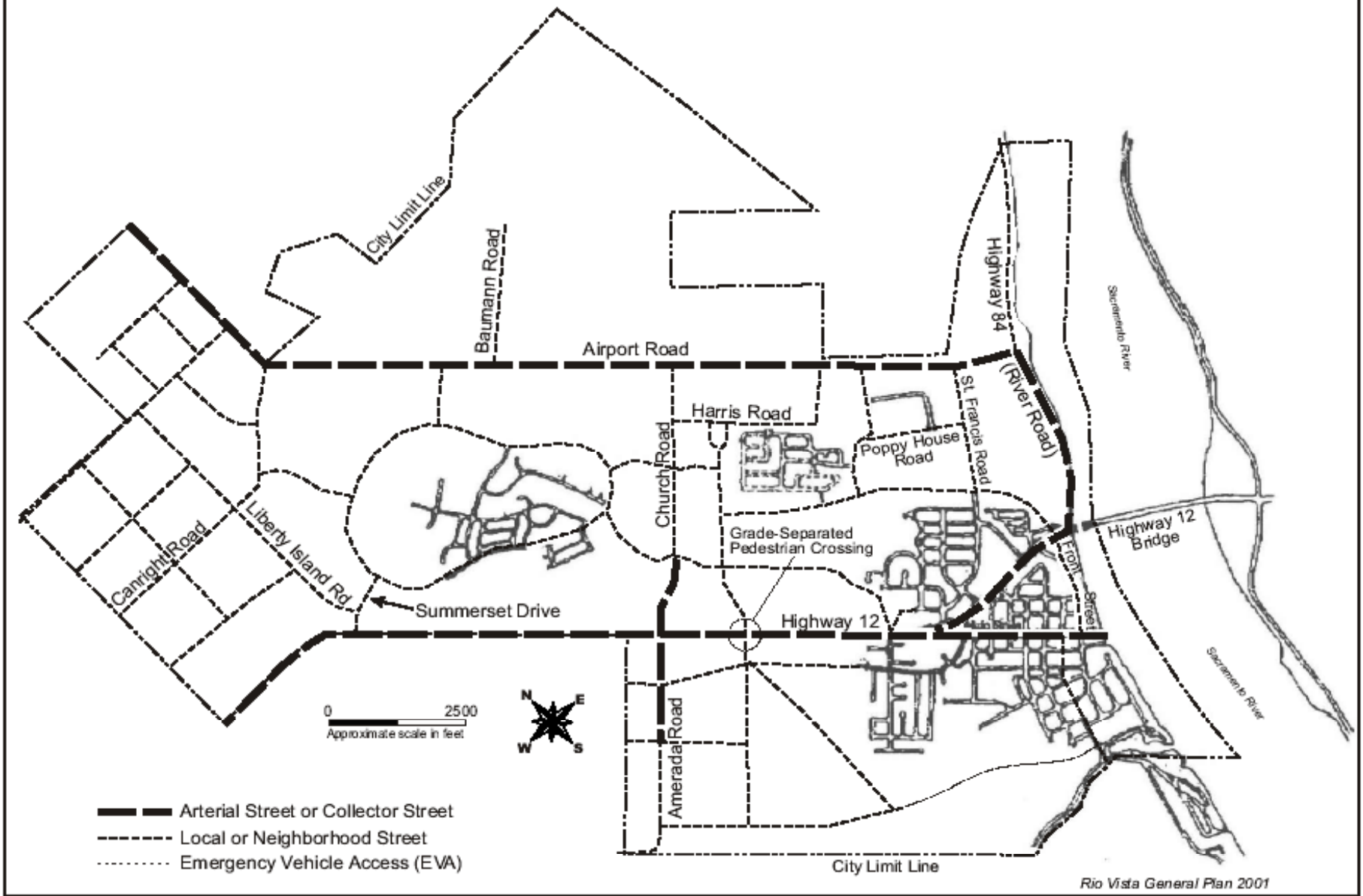
All streets are designed to function as multi-modal facilities that serve local vehicular, pedestrian, and bicycle traffic; provide access to businesses, residences, and other streets and facilities; and carry varying traffic volumes. Rather than applying a single standard for all circumstances, this General Plan uses performance-based improvement standards for the community streets.

The traffic analysis for this element indicates that the roads in Rio Vista require improvements to accommodate the amount of development projected for 2020. However, adding and widening roads is expensive and may diminish certain positive elements of Rio Vista's character. Approaches to balancing major road improvements with other ways of improving circulation include TDM or Transportation Systems Management; more efficient operation of existing roads; providing multiple linkages between new and existing neighborhoods, and within new developments; and improvements to the bicycle and pedestrian circulation systems.

ARTERIALS

Figures 8-1 and 8-3 show the current and anticipated arterial streets in Rio Vista, respectively. Highway 12 is the City's primary arterial. The Highway 12 MIS and PSR Equivalent and the STA Traffic Model indicate that Highway 12 will require various levels of improvements over time, including intersection enhancements, traffic signals, safety measures, and eventual widening to four lanes throughout Rio Vista. The Rio Vista Bridge will begin to constrain LOS capabilities regardless of the level of improvement elsewhere. This element discusses both Highway 12 and the bridge in greater detail in other sections. The traffic study indicates that other arterial streets will need various levels of improvement—ranging from selective intersection improvements and signalizations to four-lane, divided segments in some locations. Arterial street improvements also must accommodate transit, pedestrian, and bicycle traffic.

**Figure 8-3
PROPOSED CIRCULATION MAP**



Rio Vista General Plan 2001

COLLECTORS

Figures 8-1 and 8-3 show current and anticipated collector streets in Rio Vista, respectively. Traffic levels and adjacent development conditions largely will determine the need for improvements on these streets. Collectors range from two-lane residential streets that convey traffic to an arterial street (e.g., Drouin Drive) or from one neighborhood to another, to median-divided facilities that serve commercial, industrial, and residential traffic. Collectors also may become arterials as conditions change. Neighborhood character and pedestrian access will be important factors in the City's consideration of proposed design of improvements to collector streets.

LOCAL STREETS

Local streets provide access to individual residences and some businesses. The development of new neighborhoods adds new local streets. The need for driveway access, on-street parking, pedestrian access, and connections within and between neighborhoods, as well as neighborhood character will determine improvements to existing local streets, as shown in Table 8-11 and Table 8-12. Roads that are currently local in function and design may become collectors as traffic increases and improvements are made.

PROPOSED CIRCULATION SYSTEM

There are a variety of components in the City's proposed circulation system. These include function and standards, visual and pedestrian characteristics, functional (performance) characteristics, and local street descriptions. The following sections describe these components as they apply to the proposed circulation system in further detail.

VISUAL AND PEDESTRIAN CHARACTERISTICS

The local streets that provide access and connections to individual residences and neighborhoods are key elements in the creation of the traditional "village" character and ambiance of Rio Vista. The relationship of street frontage, sidewalks, trees, front yards, and house design is critical to the creation of pedestrian-friendly, pleasant neighborhoods. These neighborhoods should accommodate the automobile without sacrificing pedestrian ease, comfort, and safety. Therefore, this General Plan envisions construction of all future local streets in Rio Vista with "parkways" separating sidewalks from vehicle travel ways. In most cases, the sidewalk will be separated from the curb by at least 5 feet of landscaped parkway, with street trees planted at 30-foot intervals.

**TABLE 8-11
Arterial and Collector Streets**

Street	Location	Improvement Standard	Maximum Rights-of-Way (feet)
Highway 12	Rio Vista Bridge to Church Road	Arterial: 4 lanes with turn lane and/or median	120
Highway 12	Church Road to Azevedo Road	Arterial: 2 to 4 lanes	120
Airport Road	River Road to Liberty Island Road	Collector: 2 lanes with median	60-84
State Route 84 (River Road)	City limits to Highway 12	Collector: 2 lanes	50-72
Front Street	Main Street to Highway 12	Collector: 2 lanes	50-72
Main Street	Highway 12 to Sacramento River	Arterial: 2 to 4 lanes	80
Liberty Island Road	Summerset Drive to city limits	Collector: 2 lanes	60-72
St. Francis Way	Airport Road to Poppy House Road	Collector: 2 to 4 lanes	60-84
St. Francis Extension (new segment)	Poppy House Road to Highway 12 at Front Street	Collector: 2 lanes	60-72

**TABLE 8-12
Responsibilities for Road Improvements**

Route Or Street Classification	Abutting Property Owner	City (via Roadway Impact Fee)	State
Highway 12	Dedication of all rights-of-way from center line	50 percent of improvements plus 2 additional lanes	50 percent of improvements
Arterial and collector	Dedication of all rights-of-way and provision of all frontage improvements (curb, gutter, sidewalk, landscaping); and 24 feet of paving on each side on which owner's property abuts	Remainder of paving and median improvements	Not applicable
Intersection improvement (traffic signal)	Only if traffic analysis shows impact not forecasted as part of Roadway Impact Fee Program	100 percent	Varies
Collectors	Property owner is responsible for all rights-of-way and improvements	Not applicable	Not applicable

FUNCTIONAL (PERFORMANCE) CHARACTERISTICS

Several key elements will determine how streets in proposed developments will function or perform and, therefore, will influence their design.

- **Traffic volume served.** Traffic volume measured in average daily vehicle trips (also referred to as average daily traffic or ADT) will be the most important determinant of the needed width and access control. ADT factors include the number of residences taking direct access, the location of a segment or block within the development (i.e., how many other streets feed traffic onto the particular segment), and the directional preference of drivers to and from traffic attractors outside the block.
- **Design speed.** Expected vehicle speed will affect the need for width and access control. Wider streets encourage faster vehicular speeds. Local streets are expected to be designed for slow speeds—25 miles per hour (mph) for residential streets; 15 mph for limited residential, one-way, and cross streets; and 10 mph for alleys.
- **One-way or two-way traffic.** One-way traffic requires only one through-lane, while two-way flows need at least two through-lanes.
- **Number of lots taking access within a block.** The number of driveways or vehicles that will need to be accommodated for local access, in addition to any through-traffic expected to be present, will be a consideration in the review of proposed development.
- **Lot width or density.** Lot width or density will determine the number of lots served by a street segment or block. If lots are wider, there are fewer access points for street loading, which reduce street width requirements.
- **Direct access from residences.** Whether residences access the street from multiple driveways along the street (front-loaded lots) or only at discrete points is a determining factor in street width requirements. For example, each lot may gain access by a separate driveway from the front of the lot to a garage or from controlled drives or alleys. More access points along streets correspond to more potential vehicle conflicts and necessitate wider streets. Street width can be reduced if street loading occurs at fewer access points.
- **Garage location.** Placing the garage in the rear of the lot will allow for more parking on the lot or within alleys, reducing the need for on-street parking lanes.
- **Length of block.** The length of a block affects the number of lots served and traffic accommodated by a given street segment. Longer blocks must accommodate more traffic, more lots, and more vehicle entry points—with more potential conflicts; therefore, development on longer blocks requires wider street sections.
- **On-street parking.** The presence or absence of on-street parking affects street width requirements. A determination will be made whether to provide on-street parking on one, both, or neither side(s). The required amount of on-street parking diminishes with the presence of alley parking and longer driveways.

LOCAL STREET DESCRIPTIONS

In this General Plan, the local street hierarchy consists of residential streets, minor/limited residential streets, cross streets, and alleys.

- **Residential streets** are expected to provide parking on both sides and carry traffic volumes of 500 ADT or more.
- **Minor/limited residential streets** generally have parking only on one side. This allows for a narrower street with a lower design speed (15 mph), which is expected to accommodate less than 500 ADT.
- **Cross streets** connect blocks, but no lots directly access these streets. They are typically short segments, crossing no more than two or three intersections. On-street parking is not present because there are no fronting lots. Alleys, common drives, or parking courts may intersect and take access to these cross streets mid-block.
- **Alleys** are narrow roadways that provide direct access to lots in a controlled fashion—as they preclude direct driveway access by individual lots to a fronting street. Alleys usually provide rear access to garages, carriage houses, onsite parking, and service vehicles and are constructed to driveway standards. Alleys are expected to carry only the traffic from the lots served and have a very low design speed of 10 mph. Future design specifications will provide for a travelway of at least 16 feet wide, as well as a 3-foot width of landscaped area between the travelway and rear lot fences.

FUTURE CIRCULATION IMPROVEMENTS

LOCAL STREETS

In the future, heavy traffic on through-streets may prompt drivers to take shortcuts through residential neighborhoods. Furthermore, as development occurs in the area south of the existing Old Rio Vista neighborhoods, residential traffic will increase. Because there are no arterials connecting the downtown or Highway 12 from the south, through-traffic may affect Old Rio Vista neighborhoods—primarily along Second, Third, and Front Streets. The Drouin Drive and Sierra Drive neighborhoods also may experience through-traffic problems as growth occurs. Streets that are wider than residential scale also generate impacts because they tempt drivers to speed.

Figure 8-3 shows general locations and routes for critical street linkages. Some of those linkages are collector streets; others are neighborhood, local, or minor streets that need to be strategically located in order to provide multi-modal connections between neighborhoods, major streets, or other destinations.

HIGHWAY 12

The *Highway 12 MIS and PSR Equivalent* (Korve Engineering, 2001) indicates that sometime around 2010 (the halfway point in the projected buildout of this General Plan), portions of Highway 12 will need to be expanded to four lanes in order to maintain the LOS standards set by the policies of this element. By full buildout in 2020 or beyond, all of Highway 12 through Rio Vista will need to be four lanes. The study also acknowledges that, long-term, the Rio Vista

Bridge will need to be expanded or a new bridge will need to be constructed in another location—creating a bypass for inter-regional (through) traffic. The particulars of location, design, and funding require a future study and planning process. The STA Traffic Model supported and recommended the following improvements:

- Widen Highway 12 to four lanes from the city limits west of Summerset Road to River Road (this could be a phased improvement over a number of years, as traffic demand warrants).
- Install a traffic signal and improve the intersection of Highway 12 and Church Road.

This Circulation & Mobility element identifies as a key policy a pedestrian and bicycle trail and pathway system, linking the Sacramento River to existing neighborhoods and downtown, as well as to future neighborhoods, parks, and commercial centers. The hazard that Highway 12 poses is one of the most serious obstacles to the realization of the trail system linkage; a means for crossing the highway at key locations between signalized intersections is necessary.

Numerous stakeholders will have a role in resolving the issues surrounding Highway 12. The City has primary fiscal responsibility for improvements (through the Roadway Impact Fee, right-of-way dedication requirements, and development review process), and the State provides various funding sources. The MTC and STA also administer several funding programs that may provide additional local funds for sidewalks, landscaping, safety crossings, and similar improvements.

RIO VISTA BRIDGE

In 1992 Caltrans studied the Rio Vista Bridge extensively, including a review of a number of options for a “high bridge” and bypass to route traffic around Rio Vista in the future. The Caltrans study of bridge alternatives considered an Antioch-style “high bridge” with a freeway-standard bypass. Caltrans preferred a route to the south, linking a bypass to Highway 12 at Azevedo Road. A “second drawbridge” with a design that raised the base level of the platform to 50 feet above water was given limited consideration. This design required removing the existing bridge and building two new bridges to the new specification. It also would have required business relocation and other community hardships.

DOWNTOWN BYPASS ROUTE

Both the northern bypass route shown in the *1991 Amendments to the 1985 Rio Vista General Plan* (City of Rio Vista, 1990) and the southern bypass indicated as the preferred route in the 1992 Caltrans study would create severe community and environmental impacts. A bypass located miles to the north or south would severely impact the viability of the existing highway commercial retail base and likely would force relocation of much of this activity to the bypass route outside the proposed urban limits. The previously recommended northern bypass route now conflicts with the policies of the DPC. The area north of the City is largely floodplain, wetland and drainage areas, and agricultural lands. The area south of the City contains the Montezuma Hills and large dryland farming operations, as well as sensitive habitat areas along the Sacramento River.

After reviewing potential alternatives, the General Plan Steering Committee recommended Airport Road as a potential bypass route with more community benefits and fewer drawbacks than the earlier recommendations. Airport Road is less than 1 mile from the existing bridge,

which makes the location less likely to draw business activity away from the downtown and existing corridor. Also, Airport Road is already designated as a major arterial, with a proposed right-of-way of 100 feet. An Airport Road bypass would pass through the heart of Rio Vista's industrial districts, thereby increasing visibility of these areas. A bypass at the Airport Road location would relocate the major truck access points away from the existing business district and residential areas. Concerns regarding this bypass route include avoiding environmental impacts and acquisition of excessive rights-of-way.

TRANSIT SYSTEM

Highway 12 is designated as an interim future transit route. Planned transit stops include the locations along Highway 12, Church Road (north and south of Highway 12), Main Street, and the intersection of Liberty Island and Canright Roads in order to serve proposed commercial activity centers.

BICYCLE AND PEDESTRIAN FACILITIES

The Rio Vista General Plan is intended to encourage walking and biking by design. Street improvements should be viewed as an opportunity to enhance the bicycle and pedestrian system. Development projects should be designed so that pedestrians—especially seniors and adults with small children—and cyclists will feel safe from traffic. Sidewalk width, intersection configuration, and proximity to heavy traffic will be considered in assessing the need for connector trails and pathways. The City will encourage narrow streets and intersections with narrow turn radii to slow traffic. In some situations, motorized vehicles will be given priority because of their sheer numbers and the need to reduce congestion.

Adding traffic signals that respond to bicyclists riding over detectors in the pavement or to pedestrians pushing buttons that change the signal will help to make bicycling and walking safe and convenient in Rio Vista. Intersections also will require ramps for wheelchairs, baby carriages, and other non-motorized vehicles. The City will encourage consideration of alternatives, such as continuous sidewalks, pedestrian and bicycle bridges, underpasses, and designated routes through large developments, to prevent long detours for bicyclists and pedestrians.

Carefully placed buildings and well-planned pathways will encourage people to walk and bicycle to and from and within developments. For example, clustering buildings around a core, placing parking behind buildings, or separating parking areas into smaller lots or courts all reduce the distances between buildings. In some large developments, it also will be important to build paths or walkways through the site to connect with public sidewalks. The City will encourage the use of landscaping, shade trees, benches, and lighting to make walking more pleasant.

BIKEWAYS

Currently, all bikeways in Rio Vista are on-street bicycle lanes or routes. The proposed off-street path system will permit both pedestrians and riders to enjoy a safe, relaxing environment free from vehicular traffic, as well as create a natural connection from both new and existing residential neighborhoods to the Sacramento River.

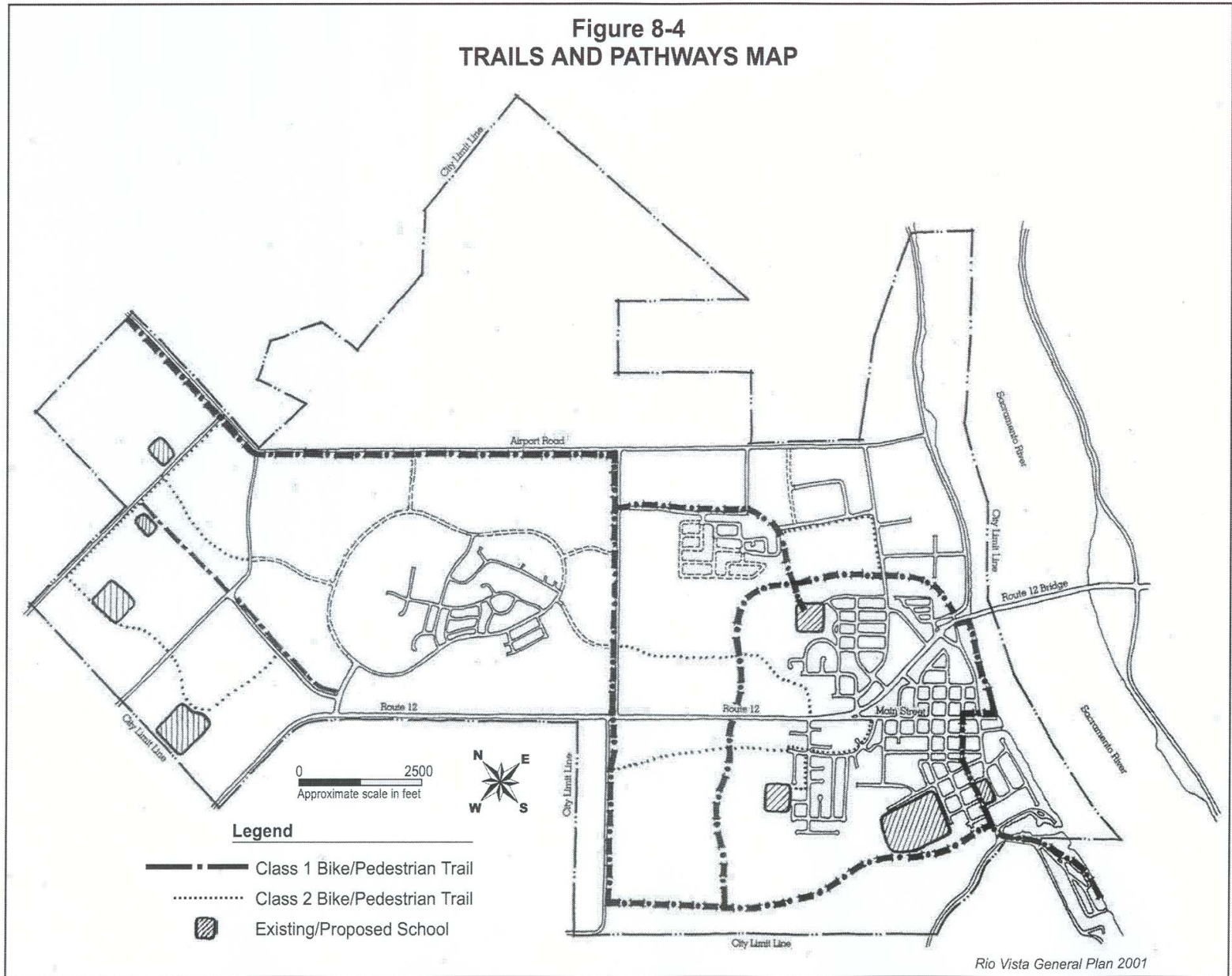
Figure 8-4 provides a map of the proposed trails and pathways system, which includes some existing pathways. Class I bikeways are separate off-street bicycle paths or trails for bicycles

only. Multi-use trails are off-street paths that are shared by pedestrians. As described earlier in this chapter, Class II bicycle lanes are striped lanes on existing rights-of-way, and Class III bicycle routes are signed bikeway routes that share the roadway with motor vehicles. Criteria for locating these routes are listed in *Table 8-7*.

BICYCLE PARKING

The City will ensure that parking is easily accessible and well-designed in an effort to encourage people to ride their bicycles to work, school, retail, and other community facilities. Bicycle racks and lockers will be installed to protect bicycles from theft and bad weather. Racks will clearly define where bicycles should be parked, discouraging impediments to pedestrians and damage to trees or other stationary objects that might be used as alternative bicycle racks. Making lockers available to long-term users, such as office workers, will provide them security and protection from the elements. Short-term users, such as shoppers, will require simply designed racks that are convenient to use. The City will review and update its ordinances as needed in order to recognize the varying demands for bicycle parking.

**Figure 8-4
TRAILS AND PATHWAYS MAP**



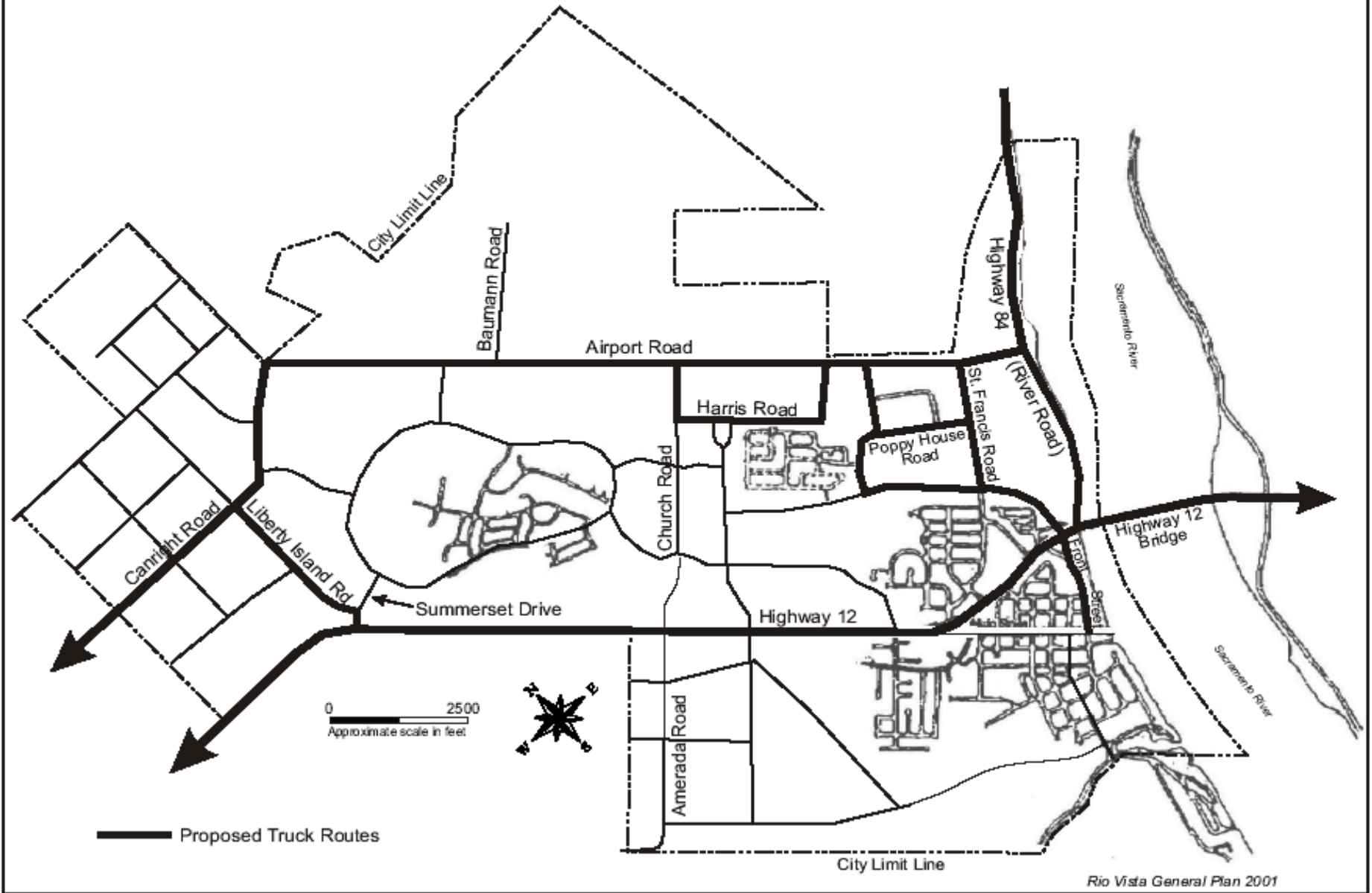
PEDESTRIAN NETWORK

Since children comprise the largest segment of pedestrians in Rio Vista, areas with a large concentration of children, such as schools and playgrounds, will demand special attention to the separation of pedestrians and vehicular traffic. Careful neighborhood, building, and site design—including the relative proximity to convenience goods and services—promotes pedestrian travel and safety. The City will achieve these objectives through successful implementation of this element along with the Land Use and Community Character & Design elements. In addition, the Trails and Pathways Map shown in *Figure 8-4* proposes to establish a safe means of travel for pedestrians, including a grade-separated crossing at Highway 12 between Drouin Drive and Church Road.

MOVEMENT OF GOODS

With the anticipated local and regional growth, Highway 12 likely will continue to serve as the primary truck route, with local truck deliveries coming into the downtown on Main and Front Streets. Other local roads that typically serve trip destinations in the industrial or employment districts in the north areas will likely continue to experience high volumes of truck traffic. Airport, Church, Liberty Island, and Canright Roads all bisect or traverse existing or planned commercial and industrial districts. The City proposes to designate these roads as truck routes (including transport of hazardous materials) for the foreseeable future or until safety considerations preclude truck traffic. *Figure 8-5* shows the anticipated future truck routes.

**Figure 8-5
PROPOSED TRUCK ROUTES**



Rio Vista General Plan 2001

F. Goals, Policies, and Implementing Actions

An effective circulation system provides for the movement of people, goods, and energy, while minimizing negative external effects such as safety hazards, congestion, and noise. This element provides guidance toward improving the efficiency of the City’s transportation and circulation network. The City of Rio Vista has developed goals, policies, and implementing actions that stem from and are intended to achieve the related Rio Vista Principles and vision statements developed through the community visioning process. The implementing actions associated with each policy are fully described in Section G, “Implementing Actions,” at the end of this chapter.

STREETS AND ROADWAY SYSTEM

The City’s policies for its streets and roadway system direct development to integrate opportunities for all modes of transportation in order to facilitate movement throughout the City. Large residential developments have concentrations of people, some of whom will work in the same general locations. Developers will be expected to incorporate design features that encourage (or at least do not discourage) access by bicycle, sidewalk connections, carpool waiting areas, and—as the population grows, bus stops.

GOAL 8.1 TO PROVIDE A MIX OF LAND USES CLOSE TO EACH OTHER AND AT SUFFICIENT INTENSITIES TO SUPPORT WALKING, BICYCLING, AND OTHER ALTERNATIVE MODES OF TRANSPORTATION.

Policy	Implementing Action
8.1.A The City shall designate land uses in a manner that minimizes use of the automobile within the city limits.	CM-1 <i>Land Use Map</i> CM-2 <i>Specific Plans</i>
8.1.B The City shall not require a single design standard; multiple standards shall be allowed as needed to achieve the desired expansion of vehicular, pedestrian, and bicycle capacity over time.	CM-3 <i>Roadway Performance Criteria and Street Design</i>
8.1.C The City shall ensure that highway expansion is implemented in a manner that preserves as much as possible of the rolling hillsides and views, even if design speeds will be lower than similar state highways.	CM-3 <i>Roadway Performance Criteria and Street Design</i>

Policy		Implementing Action	
8.1.D	The City shall consider the “typical” Caltrans expressway design inappropriate within the city limits.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
8.1.E	The City shall require sidewalks on public streets in all new developments, as shown in Figures 8-6 through 8-11.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
8.1.F	The City shall ensure that signals, turn lanes, roundabouts, and other intersection improvements are used appropriately, to reduce the restrictions of intersections on lane capacity.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
8.1.G	The City shall ensure that individual properties or development sites are not viewed as self-contained islands.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
8.1.H	The City shall encourage the use of properly designed “park once” concepts between adjacent retail and similar uses.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
8.1.I	The City shall ensure that pedestrians, bicyclists, and vehicles are not required to travel a circuitous route to access adjacent services or nearby shopping.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
8.1.J	The City shall avoid placement of travel lanes immediately next to sidewalks in the plans for street widening.	CM-3	<i>Roadway Performance Criteria and Street Design</i>

GOAL 8.2 TO BUILD AND MAINTAIN A SAFE AND EFFICIENT LOCAL STREET AND HIGHWAY SYSTEM.

Policy		Implementing Action	
8.2.A	The City shall improve traffic controls and pedestrian access on Highway 12.	CM-4 CM-5 CM-6 CM-7 CM-8 CM-9	<i>Development Review Capital Improvement Program Roadway Impact Fee Program Traffic Reduction Measures Interagency Coordination Local, State, and Federal Funds</i>
8.2.B	The City shall ensure that future development and roadway capacities are in balance.	CM-4 CM-5 CM-6	<i>Development Review Capital Improvement Program Roadway Impact Fee Program</i>
8.2.C	The City shall ensure that new and upgraded arterial streets and their intersections are designed and built to function at least at level of service (LOS) "D," (acceptable delay) during peak traffic periods.	CM-4 CM-5 CM-6	<i>Development Review Capital Improvement Program Roadway Impact Fee Program</i>
8.2.D	The City shall maintain a level of service (LOS) "D" as the target LOS for all major street intersections not specified as LOS "E" by Policies 8.2.F and 8.2.G.	CM-4 CM-5 CM-6	<i>Development Review Capital Improvement Program Roadway Impact Fee Program</i>
8.2.E	The City shall maintain a level of service (LOS) "E" for the downtown, neighborhood commercial areas, and other areas where vitality, pedestrian activity, and transit accessibility are or will be primary considerations as the community grows.	CM-4 CM-5 CM-6	<i>Development Review Capital Improvement Program Roadway Impact Fee Program</i>
8.2.F	The City shall maintain a level of service (LOS) "E" for Main and Front Streets between Main Street and Highway 12.	CM-4 CM-5 CM-6	<i>Development Review Capital Improvement Program Roadway Impact Fee Program</i>

Policy	Implementing Action
8.2.G The City shall implement the specifications for rights-of-way and improvements that are shown in <i>Table 8-11</i> for existing and future arterial streets.	<i>CM-4 Development Review</i> <i>CM-5 Capital Improvement Program</i> <i>CM-6 Roadway Impact Fee Program</i>
8.2.H The City shall ensure that future arterial streets are constructed in accordance with the right-of-way and design standards shown in <i>Figure 8-6</i> .	<i>CM-3 Roadway Performance Criteria and Street Design</i> <i>CM-4 Development Review</i> <i>CM-5 Capital Improvement Program</i> <i>CM-6 Roadway Impact Fee Program</i>
8.2.I The City shall ensure that new development is responsible for funding and construction of necessary improvements that are directly attributable to the impacts generated by that project.	<i>CM-3 Roadway Performance Criteria and Street Design</i> <i>CM-4 Development Review</i> <i>CM-6 Roadway Impact Fee Program</i>
8.2.J The City shall require that new development projects mitigate their share of offsite traffic impacts (outside the boundaries of the specific development properties) in order to maintain the level of service standards of Policies 8.2.D, 8.2.E, 8.2.F, and 8.2.G.	<i>CM-4 Development Review</i> <i>CM-6 Roadway Impact Fee Program</i>
8.2.K The City shall ensure improvements are provided prior to the deterioration of levels of service below the standards of Policies 8.2.D, 8.2.E, 8.2.F, and 8.2.G.	<i>CM-4 Development Review</i> <i>CM-5 Capital Improvement Program</i> <i>CM-6 Roadway Impact Fee Program</i>
8.2.L Where feasible, the City shall improve safety and traffic flow for both cars and pedestrians on existing streets and congested intersections.	<i>CM-5 Capital Improvement Program</i> <i>CM-6 Roadway Impact Fee Program</i>

Policy		Implementing Action	
8.2.M	As development occurs adjacent to these proposed streets or earlier if the need arises, the City shall ensure that the collector and important local street system is completed as shown in Figure 8-3.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
		CM-4	<i>Development Review</i>
		CM-5	<i>Capital Improvement Program</i>
		CM-6	<i>Roadway Impact Fee Program</i>
8.2.N	The City shall ensure that rights-of-way, performance standards, and design characteristics for future arterial and collector streets are implemented as shown in Figures 8-6 and 8-7.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
8.2.O	The City shall require improvement and performance standards for local streets (as shown in Figures 8-6 through 8-12) in new developments. (Note: additional design and performance requirements for adjacent lots are discussed in the Community Character & Design element).	CM-3	<i>Roadway Performance Criteria and Street Design</i>
		CM-4	<i>Development Review</i>
8.2.P	The City shall require new development to provide signals or other improvements at appropriate intersections in a timely manner, to prevent the deterioration of service levels.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
		CM-4	<i>Development Review</i>
8.2.Q	The City shall ensure that the first priority of improvements is at intersections, followed by segment (lane) expansion.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
		CM-4	<i>Development Review</i>
8.2.R	The City shall ensure that intersection improvements, including signals, are provided prior to meeting any necessary Caltrans warrants, to prevent deterioration of service levels.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
		CM-5	<i>Capital Improvement Program</i>
		CM-6	<i>Roadway Impact Fee Program</i>

Policy		Implementing Action	
8.2.S	The City shall construct intersection and traffic signals as needed to avoid deterioration of service levels while waiting for an adjacent property owner to develop.	CM-5 CM-6	<i>Capital Improvement Program Roadway Impact Fee Program</i>

PEDESTRIAN AND BICYCLE MOBILITY

GOAL 8.3 TO DEVELOP A COMPREHENSIVE PEDESTRIAN AND BICYCLE SYSTEM OVER TIME THAT IS COORDINATED WITH THE CITY'S ROADWAY SYSTEM.

Policy		Implementing Action	
8.3.A	The City shall provide a continuous system of sidewalks along streets.	CM-4 CM-5 CM-10	<i>Development Review Capital Improvement Program Development Agreements</i>
8.3.B	The City shall complete the comprehensive pedestrian and bicycle systems, including off-street multipurpose paths and trails linking major new development areas with the waterfront.	CM-11 CM-12 CM-13	<i>Public/Private Cooperation Trails and Pathways Map Countywide Bicycle Plan</i>
8.3.C	The City shall develop pedestrian and bicycle paths in the trail corridor and along the waterfront.	CM-11 CM-12 CM-13	<i>Public/Private Cooperation Trails and Pathways Map Countywide Bicycle Plan</i>
8.3.D	The City shall maintain the bicycle pathway system in a condition that provides a safe means of bicycle travel and connects to all parts of the City.	CM-12 CM-14 CM-15	<i>Trails and Pathways Map Assessment Districts Bikeways and Trails Maintenance Program</i>
8.3.E	The City shall separate bikeways from streets wherever possible. Where off-road bicycle paths are not possible, the City shall designate on-street bicycle lanes.	CM-3	<i>Roadway Performance Criteria and Street Design</i>

Policy		Implementing Action	
8.3.F	The City shall require maintenance assessment districts, lighting and landscaping districts, homeowner associations, and other appropriate funding mechanisms for maintenance of bikeways and trails.	CM-4	<i>Development Review</i>
		CM-10	<i>Development Agreements</i>
8.3.G	The City shall require nonresidential developments to build clearly identified internal walkways that are distinct from roadways and directly connect building entrances to public sidewalks and transit stops.	CM-4	<i>Development Review</i>
		CM-10	<i>Development Agreements</i>
8.3.H	The City shall ensure that developments are designed carefully to prevent parking lots, loading and delivery areas, and sound walls and buffers from becoming barriers to pedestrians and bicyclists. The City shall ensure that adjacent land uses do not prevent access between buildings, walkways, and parking areas.	CM-4	<i>Development Review</i>
		CM-10	<i>Development Agreements</i>
8.3.I	As bikeways are constructed, the City shall ensure that they provide direct routes to major employment centers from residential areas.	CM-4	<i>Development Review</i>
		CM-10	<i>Development Agreements</i>
		CM-12	<i>Trails and Pathways Map</i>
8.3.J	The City shall incorporate bicycle facilities into the design of arterial streets, intersections, and other street improvement projects.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
		CM-4	<i>Development Review</i>
		CM-12	<i>Trails and Pathways Map</i>
8.3.K	The City shall provide for safe walkways, and pedestrian and bicycle crossings for arterial streets, Highway 12, creeks, and other physical barriers.	CM-3	<i>Roadway Performance Criteria and Street Design</i>
		CM-12	<i>Trails and Pathways Map</i>
		CM-15	<i>Bikeways and Trails Maintenance Program</i>

Policy	Implementing Action
8.3.L The City shall construct sidewalks on new or reconstructed streets with a separation from the curb by including a landscaped parkway or greenbelt wide enough to allow for planting of shade trees.	<i>CM-3 Roadway Performance Criteria and Street Design</i> <i>CM-4 Development Review</i> <i>CM-12 Trails and Pathways Map</i>
8.3.M The City shall ensure the provision of secure bicycle parking at centers of public and private activity. The City shall require new commercial development to provide bicycle parking.	<i>CM-4 Development Review</i> <i>CM-12 Trails and Pathways Map</i> <i>CM-15 Bikeways and Trails Maintenance Program</i>
8.3.N The City shall actively promote bicycling and bicycle safety.	<i>CM-11 Public/Private Cooperation</i> <i>CM-12 Trails and Pathways Map</i> <i>CM-16 Public Education and Outreach</i>
8.3.O. The City shall plan for a multi-modal transfer site that incorporates automobile parking areas, bike parking, transit, pedestrian paths, and park-and-ride pick-up points. (Also, see Resource Conservation and Management Element for General Plan Policy 10.6.H.)	<i>CM-4 Development Review</i> <i>CM-5 Capital Improvement Program</i> <i>CM-11 Public/Private Cooperation</i> <i>CM-16 Public Education and Outreach</i>

NEIGHBORHOOD CIRCULATION

NEW RESIDENTIAL DEVELOPMENTS

The intent of the City’s neighborhood circulation policies is to ensure that new development roadways are designed on a grid or modified grid street system that provides multiple choices of routes to destinations—both for drivers and pedestrians. Traffic dispersal prevents concentration on one or a few neighborhood streets that are not intended to serve as primary traffic routes. Allowing for the continuation of the grid into adjacent properties in the future will enable this pattern of dispersal to continue as growth progresses. Multiple intersections with stop signs also encourage through-traffic to use collector and arterial streets instead of local ones. In addition, the same measures discussed and illustrated in the following section, “Existing Neighborhoods,” can be designed into new neighborhoods as they are built.

GOAL 8.4 TO PREVENT FUTURE RESIDENTIAL NEIGHBORHOODS FROM EXCESSIVE TRAFFIC THROUGH CAREFUL DESIGN THAT EMPHASIZES MULTIPLE CONNECTIONS AND CHOICES OF ROUTE.

Policy	Implementing Action
8.4.A The City shall ensure that development patterns avoid an excessive concentration of traffic on streets that funnel traffic to existing residential streets or to Highway 12.	<p>CM-2 <i>Specific Plans</i> CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i></p>
8.4.B The City shall encourage the dispersal of traffic to discourage the overuse of any single neighborhood collector or local street, by using traffic-calming measures, increasing route choices, and related actions.	<p>CM-2 <i>Specific Plans</i> CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i></p>
8.4.C The City shall require new development to provide multiple connections through a grid or grid-like system of local streets with multiple connection opportunities, both internally and to potential future developments.	<p>CM-2 <i>Specific Plans</i> CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i></p>
8.4.D The City shall discourage development of discrete “pods” or “villages” with limited interlinks.	<p>CM-2 <i>Specific Plans</i> CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i></p>
8.4.E The City shall maximize the number of connections to existing neighborhoods to reduce traffic concentration.	<p>CM-2 <i>Specific Plans</i> CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i></p>
8.4.F The City shall require neighborhood traffic management design to be incorporated into all new developments in order to avoid future through-traffic problems.	<p>CM-2 <i>Specific Plans</i> CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i> CM-10 <i>Development Agreements</i></p>

Policy	Implementing Action
8.4.G As part of traffic mitigation, the City shall require retrofitting of potential problem streets in existing neighborhoods.	CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i> CM-17 <i>Neighborhood Improvement Program</i>

EXISTING NEIGHBORHOODS

A range of physical and program options can be used to divert traffic or slow it down. Simple visual cues, instituted as part of an overall neighborhood design plan, often will solve traffic-related problems. Although visual cues do not serve as traffic controls, landscaping, signage, and other improvements tell drivers that they are entering a quiet residential place, where they should drive more slowly, be more aware of conditions along the edge of the street, and respect local pedestrian and bicycle traffic. Recognizable neighborhood entries are visual cues. Entries can be marked by short center medians or corner curb “bulb-outs” with landscaping and signs. Short medians or tree planting pockets that extend into the parking lane narrow the perceived width of the street, which can control speed. Where visual cues do not work, the next step would be to consider installing speed undulations or closing the street partially or completely. Speed undulations are raised pavement, similar to speed bumps, but much wider. It is important to note that physical deterrents may increase response times for emergency vehicles, reduce access, increase noise, and cause new and increased maintenance costs.

GOAL 8.5 TO PROTECT EXISTING RESIDENTIAL NEIGHBORHOODS FROM EXCESSIVE THROUGH-TRAFFIC, WHERE FEASIBLE.

Policy	Implementing Action
8.5.A The City shall emphasize deterrents to through-traffic; physical obstacles shall be installed only as a last resort.	CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i>

TRANSIT SYSTEM

GOAL 8.6 TO PROVIDE FAST, CONVENIENT, COMPREHENSIVE, AND DEPENDABLE TRANSIT AND PARATRANSIT SERVICE AS RIO VISTA GROWS.

Policy	Implementing Action
<p>8.6.A The City shall ensure that a mix of uses and intensities are programmed for areas within ¼- to ½- mile radii of logical future transit routes and commercial activity centers. Park and Ride lots will be located where convenient and accessible; most likely adjacent to Highway 12 within the Neighborhood Core District.</p>	<p>CM-1 <i>Land Use Map</i> CM-2 <i>Specific Plans</i> CM-18 <i>Transportation Development Act</i></p>
<p>8.6.B The City shall ensure that the physical design of new development projects facilitates transit use.</p>	<p>CM-2 <i>Specific Plans</i> CM-4 <i>Development Review</i></p>
<p>8.6.C As population growth and circumstances warrant, the City shall provide reliable bus service to Rio Vista residents. The City shall continue to provide the current service to destinations within and outside Rio Vista.</p>	<p>CM-9 <i>Local, State and Federal Funds</i> CM-18 <i>Transportation Development Act</i> CM-19 <i>Transportation Systems Management</i></p>
<p>8.6.D The City shall support improved access to public transportation by people with impaired mobility.</p>	<p>CM-5 <i>Capital Improvement Program</i> CM-9 <i>Local, State, and Federal Funds</i> CM-18 <i>Transportation Development Act</i> CM-19 <i>Transportation Systems Management</i></p>
<p>8.6.E Where needed, the City shall supplement the future public transit system with continued availability of paratransit services.</p>	<p>CM-5 <i>Capital Improvement Program</i> CM-9 <i>Local, State and Federal Funds</i> CM-18 <i>Transportation Development Act</i> CM-19 <i>Transportation Systems Management</i></p>

Policy	Implementing Action
8.6.F The City shall encourage private taxi service in Rio Vista.	CM-11 <i>Public/Private Cooperation</i> CM-18 <i>Transportation Development Act</i> CM-19 <i>Transportation Systems Management</i>
8.6.G The City shall encourage innovative methods of running shuttle services within Rio Vista as needed.	CM-11 <i>Public/Private Cooperation</i> CM-18 <i>Transportation Development Act</i> CM-19 <i>Transportation Systems Management</i>
8.6.H The City shall actively support the plans of transit service providers to increase service frequency and hours of service. The Solano Transportation authority's Comprehensive Transportation Plan, Transit Element, is incorporated by reference into the Rio Vista circulation and Mobility Element.	CM-11 <i>Public/Private Cooperation</i> CM-18 <i>Transportation Development Act</i> CM-19 <i>Transportation Systems Management</i>

GOAL 8.7 TO SUPPORT THE DEVELOPMENT AND MAINTENANCE OF TRANSPORTATION FACILITIES THAT ARE AESTHETICALLY PLEASING WITH MINIMAL ADVERSE ENVIRONMENTAL EFFECTS.

Policy	Implementing Action
8.7.A The City shall enhance the character of arterials, collectors, and local streets with landscaping and special design elements in and adjacent to residential neighborhoods.	CM-4 <i>Development Review</i> CM-10 <i>Development Agreements</i> CM-20 <i>Zoning Ordinance Review and Update</i> CM-21 <i>Subdivision Ordinance Review and Update</i>
8.7.B The City shall reduce the negative effects caused by roadways on visual quality, air quality, and noise.	CM-4 <i>Development Review</i>

WATER TRANSPORTATION

GOAL 8.8 TO REESTABLISH RIO VISTA’S WATERFRONT AS A REGIONAL DESTINATION FOR BOTH RECREATIONAL AND COMMERCIAL WATER TRANSPORTATION ACTIVITIES.

Policy	Implementing Action
8.8.A The City shall provide for additional private boat berths, public access, and support facilities on the waterfront in order to allow residents of the City and region to enjoy water-oriented recreation, public transportation, and commercial opportunities on the Sacramento River.	<p>CM-2 <i>Specific Plans</i></p> <p>CM-4 <i>Development Review</i></p> <p>CM-20 <i>Zoning Ordinance Review and Update</i></p> <p>CM-21 <i>Subdivision Ordinance Review and Update</i></p>
8.8.B The City shall use any eligible sources of local, state, and federal funding to accomplish the dredging, shoreline stabilization, public access, and construction of recreational facilities.	CM-9 <i>Local, State and Federal Funds</i>

GOAL 8.9 TO PROVIDE EASE OF CIRCULATION AND ACCESS FOR ALL RIO VISTANS, INCLUDING THE MOBILITY-IMPAIRED.

Policy	Implementing Action
8.9.A The City shall continue to implement requirements for handicapped parking and building access in public and private developments.	<p>CM-3 <i>Roadway Performance Criteria and Street Design</i></p> <p>CM-17 <i>Neighborhood Improvement Program</i></p> <p>CM-22 <i>Uniform Building Code</i></p>

REGIONAL TRAFFIC

GOAL 8.10 TO EFFECTIVELY MANAGE REGIONAL TRAFFIC GROWTH.

Policy	Implementing Action
8.10.A The City shall actively participate in regional planning efforts and programs at the Bay Area, County, and subregional level to reduce regional traffic growth.	CM-7 <i>Traffic Reduction Measures</i> CM-8 <i>Interagency Coordination</i>

RIO VISTA BRIDGE

For the foreseeable future, routing through-traffic miles away from Rio Vista would result in devastating effects on the current retail economy. Any such bypass also would result in major environmental and visual impacts. A bypass north of Airport Road is contrary to policies of the DPC, while a southern bypass would cut through the Montezuma Hills, wetlands, and farmlands. Both routes would induce growth in areas outside the current and proposed urban limits and would force premature annexation in order to manage this growth. Furthermore, the costs of the previous alternatives studied in 1992 are prohibitive. Therefore, the City seeks to identify a less costly and damaging alternative and funding source for the immediate future. The City shall support an alignment along Airport Road as the preferred alternative, until further information is obtained.

GOAL 8.11 TO IDENTIFY THE PREFERRED ALTERNATIVE ROUTE FOR A HIGHWAY 12 BYPASS AND NEW BRIDGE.

Policy	Implementing Action
8.11.A The City shall work with the Solano Transportation Authority (STA) and Metropolitan Transportation Commission (MTC) to begin the process of establishing the new bridge.	CM-7 <i>Traffic Reduction Measures</i> CM-8 <i>Interagency Coordination</i> CM-9 <i>Local, State and Federal Funds</i>

Policy	Implementing Action
8.11.B The City shall conduct a new bridge study that focuses on a bypass and new bridge aligned with the present Airport Road as a supplement to the Caltrans (1992) study and the Highway 12 Major Investment Study and Project Study Report Evaluation (Korve Engineering, 2001). The City shall incorporate operational and institutional measures to improve efficiency of the existing bridge.	CM-8 <i>Interagency Coordination</i> CM-9 <i>Local, State and Federal Funds</i>

HIGHWAY 12 CORRIDOR

Today, Highway 12 bisects Rio Vista, acting as a physical barrier between the two “halves” of the community. Pedestrian crossings are particularly hazardous. This hazard poses one of the most serious obstacles to the realization of the trail system linkage; a means for crossing the highway at key locations between signalized intersections is necessary. This element identifies, as a key policy, the establishment of a pedestrian/bicycle trails and pathways system that links the Sacramento River to existing neighborhoods and downtown, as well as to future neighborhoods, parks, and commercial centers.

Resolving the issues surrounding Highway 12 must involve numerous stakeholders. The City bears the primary fiscal responsibility for improvements (through the Roadway Impact Fee Program, right-of-way dedication requirements, and the development review process) and the State of California provides various funding sources. The MTC and STA also administer several funding programs that may provide additional local funds for sidewalks, landscaping, safety crossings, and similar improvements.

GOAL 8.12 TO SUCCESSFULLY LINK THE TWO “HALVES” OF RIO VISTA BISECTED BY HIGHWAY 12 IN A MANNER THAT IS SAFE AND ACCESSIBLE TO ALTERNATIVE MODES OF TRANSPORTATION.

Policy	Implementing Action
8.12.A The City shall ensure that rights-of-way, performance standards, and design characteristics for Highway 12 are varied as appropriate; a “one design fits all” approach is not appropriate.	CM-3 <i>Roadway Performance Criteria and Street Design</i> CM-4 <i>Development Review</i> CM-8 <i>Interagency Coordination</i> CM-10 <i>Development Agreements</i>

Policy	Implementing Action
8.12.B As Highway 12 is expanded, the City shall ensure that lower design speeds are used where necessary to preserve the rolling hillside character of the corridor. The City shall ensure that there is minimal encroachment by roadway expansion on sensitive areas adjacent to the highway.	CM-4 <i>Development Review</i> CM-23 <i>Local Sensitive Resource Areas Map</i>
8.12.C The City shall create view corridors and open space areas in the vicinity of the proposed trail and drainageways between Church Road and Drouin Drive.	CM-23 <i>Local Sensitive Resource Areas Map</i>
8.12.D The City shall limit “back-up” walls as much as possible along the residential sections of the corridor and encourage the alternative use of landforms and open space for noise mitigation wherever feasible.	CM-5 <i>Development Review</i> CM-20 <i>Zoning Ordinance Review and Update</i> CM-21 <i>Subdivision Ordinance Review and Update</i>
8.12.E The City shall initiate a corridor design process that includes all stakeholders (private landowners and developers, Caltrans, the Highway 12 Association, local residents, and business owners) to create an appropriate standard for future expansion throughout the corridor and more immediate improvements between Drouin Drive and the Rio Vista Bridge.	CM-8 <i>Interagency Coordination</i> CM-9 <i>Local, State, and Federal Funding</i> CM-11 <i>Public/Private Cooperation</i>

F. Implementing Actions for Circulation & Mobility (CM)

Each of the following actions will be used, wherever appropriate, to implement the goals and policies of the Circulation & Mobility element.

CM-1 LAND USE MAP *(To be adopted as part of this General Plan)*

Local land use planning is a method of managing regional traffic growth and local traffic issues. This General Plan includes land use policies aimed at giving more Rio Vista workers the choice of living closer to their jobs and encouraging housing growth to follow new job creation, rather than increase the proportion of long-distance commuters. The Land Use Map establishes policies supporting mixed uses and higher density development within walking distance of planned commercial and activity centers (e.g., the intersection of Highway 12 and Church Road and the downtown). If other communities adopt similar policies, it also may be possible to improve the balance of jobs and housing on a county or regional level, which will reduce the length and number of commute trips.

The City will designate a mix of uses at higher intensities near potential transit stops and near commercial and employment centers shown on the Land Use Map of this General Plan. The City periodically will review land use policies and regulations as the transit system develops.

CM-2 SPECIFIC PLANS *(Proposed)*

As determined to be appropriate, the City will require major new development proposals to be processed through specific plans or planned unit development (PUD) permits that are consistent with these policies and the Land Use element, as well as amended Zoning and Subdivision Ordinances.

CM-3 ROADWAY PERFORMANCE CRITERIA AND STREET DESIGN *(Proposed)*

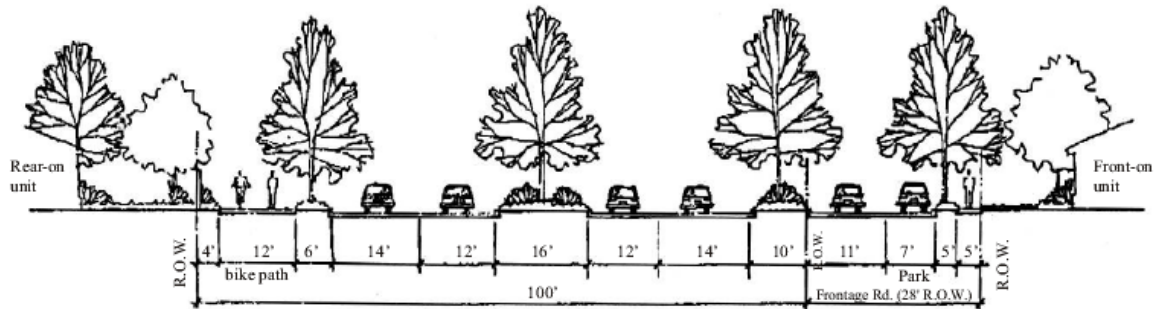
Streets are classified in a hierarchy that identifies categories or types based on their functional requirements and their relative importance in establishing community character, defining neighborhoods, providing connections between key land uses and neighborhoods, and allowing opportunities for alternative modes of travel. The location of arterials and primary streets (collector and important local street connections) are shown on *Figure 8-5*. During project design review, the City will require that the locations of other minor streets are consistent with these standards and criteria.

The following tables and illustrations describe three general levels of streets: arterials, collectors and residential access streets. Arterials are designed to carry high traffic volumes; collectors, moderate volumes; and residential streets, lower to moderate volumes that allow for direct access to residential units or lots from these streets. Residential access streets are further divided into five street types: the neighborhood through-street is the standard; four optional street types with narrower sections may be used only when lower traffic volumes and certain neighborhood characteristics allow. The performance standards that create the conditions for a particular street type determine these characteristics.

All street types are governed by performance *factors*, performance *standards* and *design characteristics* typical of the type of roadway described. These are intended to provide direction to the City's decision makers (staff, planning commission, city council and others as applicable) for interpretation and implementation. The performance standards and design characteristics are to be considered as the required implementation criteria, unless, in the sole judgment of the decision maker(s), an alternative approach is demonstrated to fully achieve the intent of the Circulation Element's goals and policies and this implementation measure and to be equivalent or superior to the criteria and standards specified below.

- **Performance factors.** A listing or description of particular traffic, safety, or community character conditions, the presence of any one of which creates an impact that will require a specified street type as the minimum condition necessary to accommodate that environmental factor or condition. For example, high traffic volumes on a particular street or the use of that street for through-traffic connections with other communities would require the street to be classified as an arterial. The absence of performance factors indicates that the utilization of a particular street is optional.
- **Performance standards.** A listing or description of the minimum conditions that must exist and are based on street type being used. For example, designation as an arterial street requires that future development or improvements to that street adhere to all performance standards listed, such as no on-street parking, intersections and curb cuts separated by at least 600 feet, and capability for a 35-mph speed limit.
- **Design characteristics.** A set of design specifications that apply to individual street types at buildout of the General Plan. Initial phases or segments of arterials or collector streets may not need to incorporate all listed characteristics but should be able to accommodate them when needed (e.g., right-of-way width and placement of utilities in initial phases must be able to accommodate future lanes, landscaping, and separated sidewalks). Some characteristics are flexible (e.g., the ultimate right-of-way for collector streets may range from 60 to 82 feet, depending on adjacent land uses and projected traffic demands).

**Figure 8-6
ARTERIAL STREET**



Major Arterial Street (100' R.O.W.)

Design Characteristics

- 100' right-of-way; additional ROW may be needed for frontage road access, etc.
- 68' Roadway (curb to curb) - room for four through lanes and a 16' median
- No on-street Parking
- Separated Parkway combined with Class 1 bike path (12' wide total) on at least one side
- 5' min. landscaped Parkway between curb and sidewalk
- "L" curb each side

Performance Factors¹(Presence of any ONE of the following)

- High traffic volumes (greater than 8,000 average daily vehicle trips or 800 PM peak hour vehicle trips²)
- Connects community to points beyond

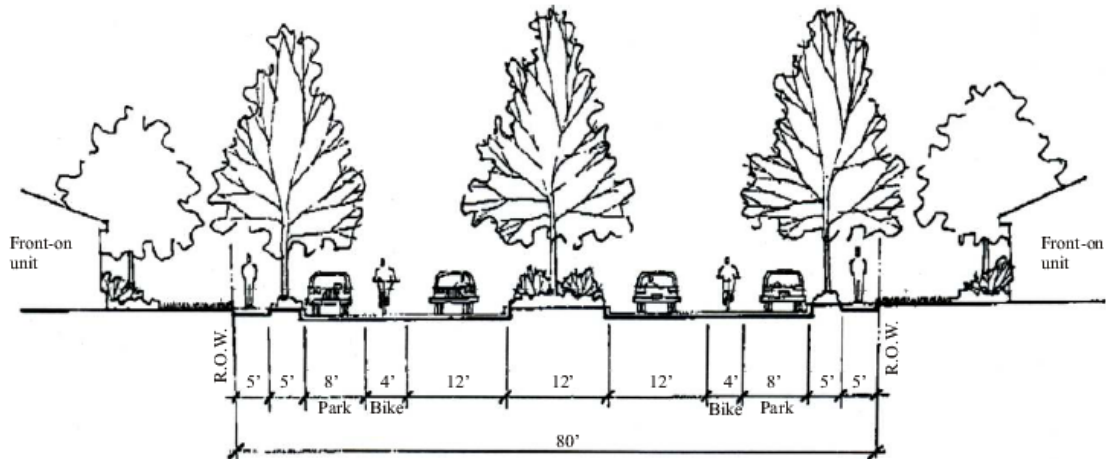
Performance Standards (All of the following required)

- No direct vehicle access to individual properties
- Driveway (curb cut) separation greater than 600 feet
- Design Speed (speed limit) - 35 mph or more

¹ Any of the performance factors listed creates a potential traffic, safety or community character impact that requires this type of street section to accommodate that condition.

² The weekday PM peak hour is the recognized traffic engineering measurement of the greatest vehicle travel volumes during any 24-hour period. It is typically 10-15% of the 24-hour average daily traffic volume.

**Figure 8-7
COLLECTOR STREET**



Collector Street (80' R.O.W. shown)- Other standards possible for varying conditions

Design Characteristics

- 60' to 82' right-of-way; additional ROW may be needed for special circumstances
- 40' to 66' Roadway (curb to curb) - two through lanes bike path and 6'-12' median (optional)
- On-street parking optional (parking shown on illustration)
- 5' min. landscape parkway between curb and sidewalk
- "L" curb each side
- Separated sidewalk on each side
- Biker path may be on or off street
- Commercial standard includes on street existing section

Performance Factors¹(Presence of any ONE of the following)

- Moderate to high traffic volumes (2,500 to 8,000 average daily vehicle trips or 250 - 800 PM peak hour vehicle trips²)
- Connects one neighborhood or district to another or to larger streets; connects major destinations within the community

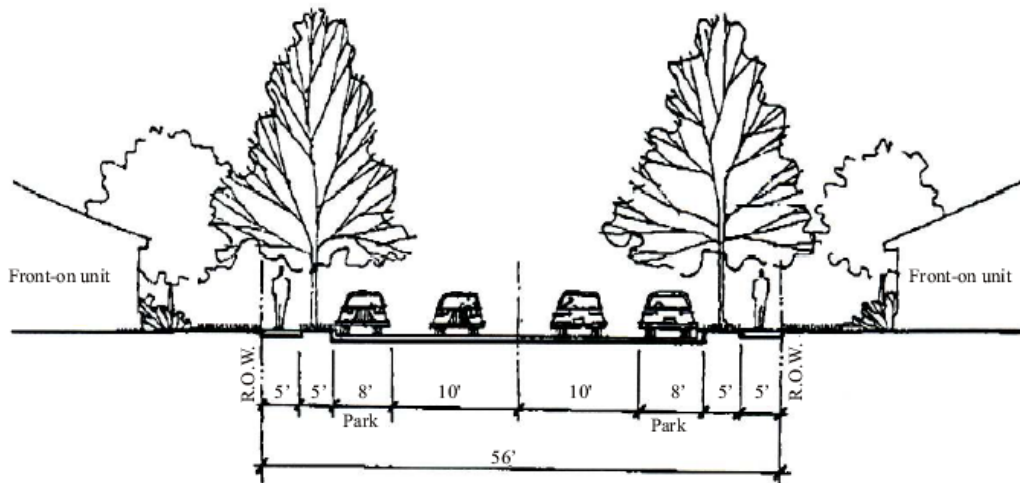
Performance Standards (All of the following required)

- No direct vehicle access to individual residences
- Driveway (curb cut) separation greater than 150 feet
- Design Speed (speed limit) - 25 - 35 mph

¹ Any of the performance factors listed creates a potential traffic, safety or community character impact that requires this type of street section to accommodate that characteristic.

² The weekday PM peak hour is the recognized traffic engineering measurement of the greatest vehicle travel volumes during any 24-hour period. It is typically 10-15% of the 24-hour average daily traffic volume.

**Figure 8-8
NEIGHBORHOOD THROUGH STREET**



Design Characteristics

- 56' right-of-way
- 36' Roadway (curb to curb) - two through lanes and two parking lanes
- On-street Parking on both sides
- Separated sidewalk landscaped parkway between curb and sidewalk
- "L" curb each side

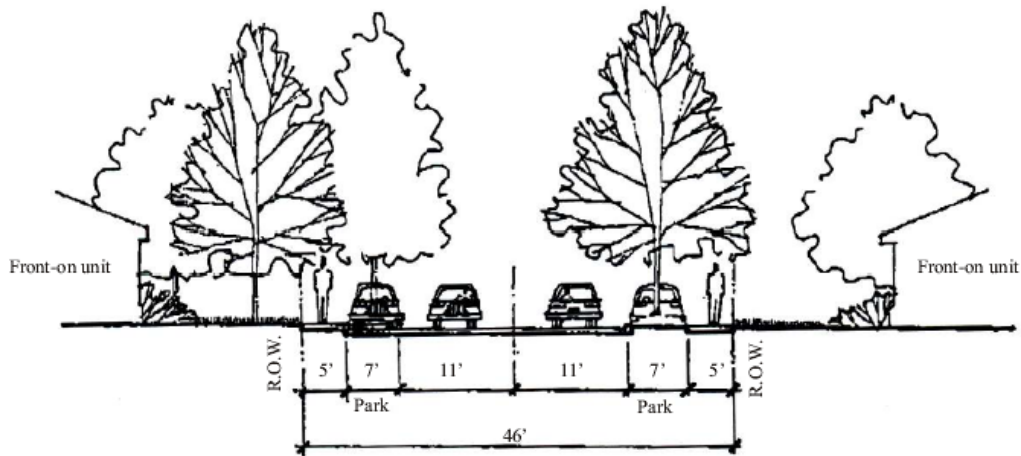
Performance Factors¹ (Presence of any ONE of the following)

- Low to Moderate traffic volumes (up to 2,500 average vehicle trips daily or 300 PM peak hour vehicle trips)²
- Garage entries closer than 30 feet from sidewalk
- Block length greater than 600 feet
- Design Speed (speed limit) - 25 mph or more

¹ Any of the performance factors listed creates a potential traffic, safety or community character impact that requires this type of street section to accommodate that characteristic.

² The weekday PM peak hour is the recognized traffic engineering measurement of the greatest vehicle travel volumes during any 24-hour period. It is typically 10-15% of the 24 hour average daily traffic volume.

Figure 8-9
LOCAL NEIGHBORHOOD STREET
 (Illustration shows alternating parking bays)



Design Characteristics

- 20' Roadway w/parking bay
- "L" curb each side
- Continuous on-street parking on one side only with separated sidewalks on both sides OR
- Parking in designated, alternating bays w/ monolithic sidewalk on parking bay side
- If continuous parking on one side 5' landscaped parkway on each side
- If alternating parking bays used, 0' - 7' landscaping between curb and sidewalk (0' at parking bay, 7' on no parking side)

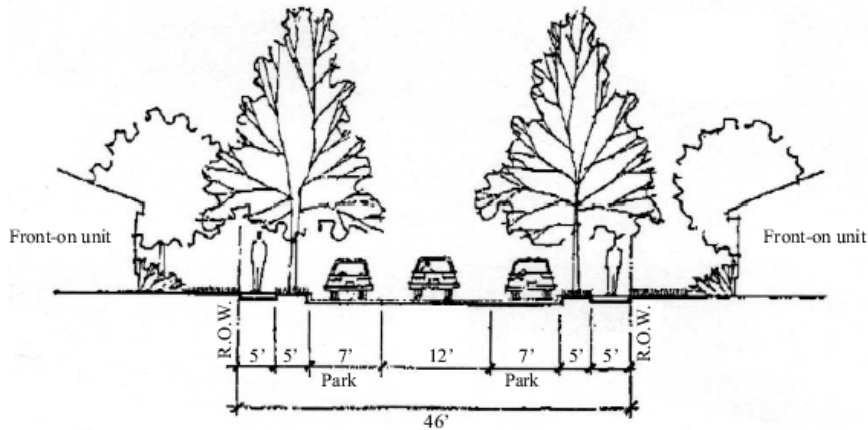
Performance Standards¹(All of the following required)

- Lower traffic volumes served -- Less than 1,500 average vehicle trips daily or 150 PM Peak Hour Vehicle Trips)
- Garage entries set back 30 feet;²OR
- Vehicle access from rear alley
- Block lengths 600 feet or less
- Maximum Design Speed (speed limit) - 20 mph

¹ These standards represent the minimum condition that will reduce the traffic, parking and safety requirements of the street to a level which can be accommodated by the design characteristics of this street.

² The intent is to provide sufficient additional off street parking to eliminate the need for on street parking on one side of the street, as compared to a "typical" single family house and garage arrangement. The typical standard to achieve such a reduction of parking demand is to set garages back to at least 30 feet behind the property line to allow for additional parking in the driveway setback. This is the expected norm for meeting the requirement, unless an equal or better solution is proposed, while being consistent with all other General Plan policies and implementation measures.

Figure 8-10
ONE WAY STREETS
 (Illustration shows section with parking on both sides)



Parking on both sides

- 46' ROW
- Separated Sidewalk
- On street parking both sides
- 26' Roadway - one through lane, two parking lanes
- Landscaped pkwy each side
- "L" curb each side
- Design Speed (speed limit) -- 15 mph

Parking on one side only

- 40' ROW
- Separated Sidewalk
- Parking one side only
- 20' Roadway - one through lane, one parking lane
- Landscaped pkwy each side
- "L" curb each side
- Design Speed (speed limit) -- 15 mph

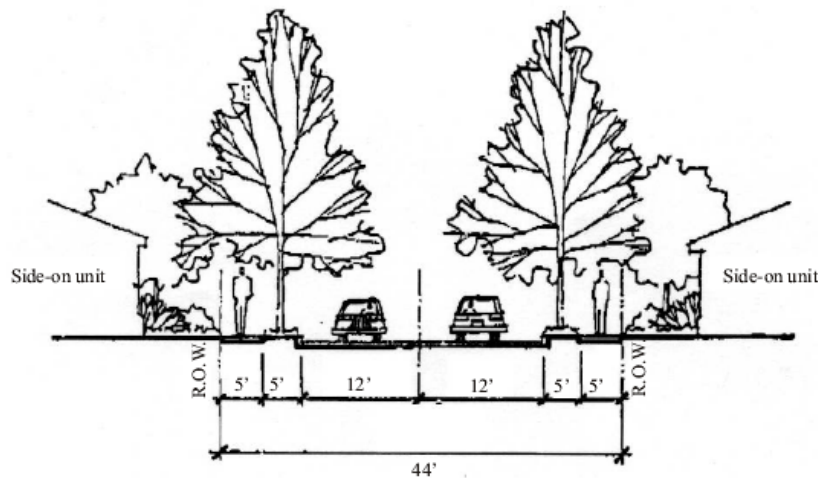
Performance Standards¹(All of the following required)

- Lower traffic volumes served -- Less than 1,500 average vehicle trips daily or 150 PM Peak Hour Vehicle Trips)
- Garage entries set back 30 feet;²OR
- Vehicle access from rear alley
- Block lengths less than 600 feet
- Maximum Design Speed (speed limit) - 20 mph

¹ These standards represent the minimum condition that will reduce the traffic, parking and safety requirements of the street to a level which can be accommodated by the design characteristics of this street.

² The intent is to provide sufficient additional off street parking to eliminate the need for on street parking on one side of the street, as compared to a "typical" single family house and garage arrangement. The typical standard to achieve such a reduction of parking demand is to set garages back to at least 30 feet behind the property line to allow for additional parking in the driveway setback. This is the expected norm for meeting the requirement, unless an equal or better solution is proposed, while being consistent with all other General Plan policies and implementation measures.

**Figure 8-11
CROSS STREETS**



Cross Streets: Cross streets are streets that connect blocks but to which no lots take direct access. These streets typically are short segments crossing no more than two or three intersections. On-street parking is not present due to lack of fronting lots. Alleyways, common drives or parking courts may intersect and take access mid-block.

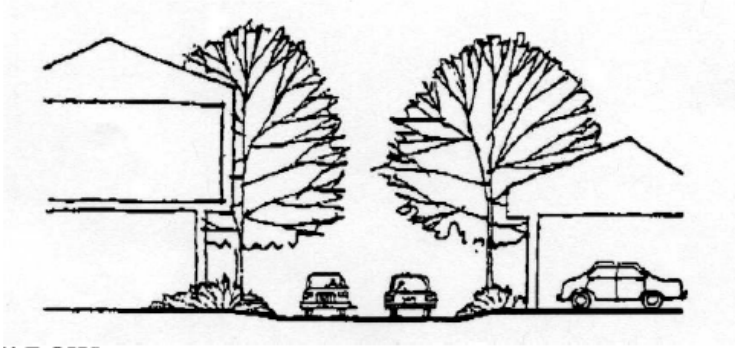
Design Characteristics

- 44' ROW
- 24' Roadway (two through lanes only)
- "L" curb each side
- Separate Sidewalk
- Limited on-street parking
- Landscaped parkway between curb and sidewalk

Performance Standards (All of the following required)

- Same as Local Residential Street, **plus:**
- Maximum 3 blocks continuous length (becomes local residential street if longer than 3 blocks)
- No individual dwelling access (driveways) from street
- If alleys present, only one alley entry/exit on each block
- Traffic must stop at each street intersection
- Design speed (speed limit) -- 15 mph

Figure 8-12
ALLEYWAY DESIGN CHARACTERISTICS



Alley (24' ROW)

Alleys: Narrow roadways that provide rear access to garages, carriage houses, on-site parking and service vehicles. Alleyways are expected to carry only the traffic from the lots served and have a very low design speed of 10 mph. A travelway of at least 16 feet plus 3 feet landscaping or textured paving area on each side is required, with driveway setback of 0 - 6 feet from alley ROW. The travelway may be reduced to 12 feet with a minimum 16 foot garage, driveway setback for alley ROW. At least three feet landscaped area shall be provided between travelway and rear lot fences. It is crucial that rear property fences be kept low for visibility into the alleyway by the adjacent residences and to avoid a "canyon" appearance in the alleyway.

Performance Standards (All of the following required)

- No parking except in designated bays
- Design speed (speed limit) -- 10 mph
Garage entry setback 5'; or at least
- 14' from ROW line
- Max fence height 3' within 20 feet of right-of-way

Design Characteristics

- Two-way traffic
- ROW -- 24'
- Roadway - 16' w/ 2' all weather shoulder on each side - no curb
- 5' landscaped setback area each side

CM-4 **DEVELOPMENT REVIEW**
(Existing)

Most nonresidential developments built since 1960 have been oriented toward automobiles. For example, building entries face vast parking lots; sidewalks are lacking or circuitous; and in business parks, often no lunchrooms are on the site or restaurants nearby. Zoning may exacerbate this by limiting uses to single-purpose manufacturing or employment functions, thereby requiring additional trips for business or civic services. Some fairly simple changes in the design of new development and redevelopment could encourage people to carpool, ride the bus, bicycle, or walk to work, thereby reducing unnecessary trips during the business day. Such revisions include rideshare drop-off and waiting areas, bicycle parking, preferential parking for carpools and vanpools, direct access to transit stops, transit pullouts and shelters, and showers for bicyclists. Onsite services could include printing and postage, repair, and rental facilities; pedestrian amenities and landscaping along sidewalks; building entry orientation toward streets rather than parking lots; lunchrooms; restaurants; and banking services. Most modern employment uses can be allowed in the downtown or retail areas, which would place employment near business and personal services, as well as add population that would support retail activities during the day.

The City's Community Development and Public Works Departments will conduct a review of each proposed development. If the City determines that a development proposal requires a traffic impact study, the analysis will be prepared to be consistent with the assumptions and methodology of the Solano Transportation Authority (STA) traffic model. In conjunction with the California Environmental Quality Act (CEQA) process, the traffic impact study may include (1) an analysis that evaluates traffic conditions assuming "market-based" development standards, and (2) a "full buildout" analysis (i.e., 20-year) that evaluates traffic conditions assuming buildout of the City under the General Plan. The traffic study will define what transportation improvements or measures are necessary to maintain the level of service (LOS) standards and will address funding impacts. The City will use the full buildout traffic analysis to identify locations where additional rights-of-way should be preserved beyond those required under the 20-year analysis. The City will consider whether improvements can be included in the existing right-of-way before widening or otherwise expanding streets and intersections.

Several developments and the City, where appropriate, would share the costs over time of specific improvements or traffic reduction programs—such as Transportation Systems Management (TSM). Area-wide studies, including the General Plan and zoning studies, could establish the types of improvements and programs, as well as the appropriate methods of payment. Assessment districts, roadway impact fees, or development agreements would allocate the appropriate share of the costs to specific developments.

Development review also will include compliance with CEQA, which requires cities to assess the environmental effects of new development, including traffic. CEQA requires a traffic analysis if a project is large or is expected to produce a significant increase in traffic demand. The Solano County Congestion Management Plan (CMP) also requires a traffic analysis for large projects that require General Plan amendments. When the traffic analysis shows that the development will cause an intersection or roadway segment to drop below desired levels of service, the City may require the new development to alleviate its share of the congestion.

In accordance with CEQA, the City will require a traffic-impact analysis for large new developments and those with the potential to worsen traffic conditions. Prior to project

approval, the City will require new development to demonstrate that the proposed mitigation measures will be adequate to prevent deterioration in level of service standards. The City will review environmental impact reports for proposed transportation projects to ensure that adequate mitigation measures are incorporated that will effectively reduce traffic impacts.

CM-5 **CAPITAL IMPROVEMENT PROGRAM**
(Proposed)

The City will adopt a Capital Improvement Program (CIP) that includes the arterial streets and intersection improvements required to maintain level of service standards set forth in this element. Korve Engineering's (2001) *Highway 12 MIS and PSR Equivalent* study also has identified near-term (2010) safety improvements.

The City's CIP could include some or all of the following improvements:

- Improvements to Drouin Drive.
- Improvements to Highway 12 between Drouin Drive and the Rio Vista Bridge (in cooperation with Caltrans).
- Replacement of deteriorated sidewalks.
- Priority designations for improvement of specific intersections.
- Installation of a trail and bicycle system.
- Improvement of existing roads, signs, and traffic signals that encourage walking and bicycle travel.
- Installation of bridges and undercrossings for bicyclists and pedestrians.
- Installation of bicycle parking in the downtown and at City parks, civic buildings, and other community facilities.
- Installation of a traffic signal at the intersection of Highway 12 and Hillside Terrace.
- Installation of a signalized, lighted crosswalk at the intersection of Highway 12 and Gardiner Way.
- Addition of left-turn lanes and acceleration-deceleration lanes at the intersection of Highway 12 and Church Road as recommended in the *Highway 12 Major Improvement Study and Project Study Report Equivalent* [Korve Engineering, 2001]).
- Installation of advance warning flashers west of the intersection of Highway 12 and Summerset Road as recommended in the *Highway 12 Major Improvement Study and Project Study Report Equivalent* [Korve Engineering, 2001]).

CM-6 ROADWAY IMPACT FEE PROGRAM
(Proposed)

The City will consistently levy a roadway impact fee on new development, through fee adoption by ordinance, development agreements, conditions of approval, and other project entitlements. In determining the fee, the City will consider traffic projections in 2020—as determined by the Solano Transportation Authority (STA) traffic model or other equivalent methodologies—for the proposed new development. The City will allow credits against the Roadway Impact Fee in order to provide immediate funding or construction and to prevent deterioration of existing levels of service. Developers will be eligible for fee credits after reaching an agreement with the City on the improvement location(s) and design(s), and the City's acceptance of the completed construction. The City will assign responsibility for providing improvements on Highway 12, intersections, and arterial and collector streets as shown in *Tables 8-11 and 8-12*.

CM-7 TRAFFIC REDUCTION MEASURES
(Proposed)

The City will use the Solano County Travel Demand Model (also referred to in this element as the Solano Transportation Authority [STA] Traffic Model) and the *Highway 12 Major Investment Study and Project Study Report Equivalent (Highway 12 MIS and PSR Equivalent)* (Korve Engineering, 2001) in evaluating the balance between development and transportation. The City will actively participate with STA to implement Transportation Demand Management (TDM) measures.

The *Highway 12 MIS and PSR Equivalent* was prepared not only to identify the type and size of roadway facility necessary to serve traffic levels forecasted, but also to develop a phased implementation plan for near-term physical improvements and establish management practices to serve near-term traffic levels. The report identified the following measures with the best potential for reducing traffic:

- **Carpooling program (park-and-ride lot).** The City will construct a park-and-ride lot that will accommodate approximately 50 vehicles at its first phase. Once fully utilized, the City will expand the facilities to increase its capacity. The City will construct the park-and-ride lot a location visible from Highway 12 and will include installing signage on the highway to identify the lot as a park-and-ride facility. Land availability will drive the exact location of the site; land dedication may be required of future development. The City would launch a local advertising campaign to publicize the new facilities and the benefits of carpooling. The advertising campaign also would emphasize the use of STA's existing ride-matching service.
- **Local shuttle program.** In conjunction with STA, the City would implement a local shuttle program that connects the Trilogy retirement community and future development with the retail and commercial uses in Suisun City and Fairfield. A single bus running on 1-hour cycles is expected to meet initial demand. The City would expand the program to include shorter cycles or other areas through STA's purchase of additional buses.
- **Transit service.** The City envisions a new SolanoLink route running from Fairfield to Suisun City and Rio Vista along Highway 12. The new route would connect to the

Capitol Corridor Station and the upcoming Fairfield Transportation Center. The City expects 1-hour cycles to meet the initial demand.

CM-8 INTERAGENCY COORDINATION
(Existing)

Regional planning is a method for addressing traffic congestion and air pollution that result from long-distance commuting. Rio Vista is working with many regional agencies to mitigate these impacts, including the following:

- **Bay Area Metropolitan Transportation Commission (MTC).** The MTC is the Bay Area's "metropolitan planning organization" (MPO) for the nine counties of the Bay Area, including Solano County. According to federal transportation policy, an MPO is responsible for transportation planning and distribution of a wide range of transportation funds, particularly federal funding. MTC prepares and implements a regional transportation plan and conducts studies of transportation corridors.
- **Solano County Transportation Authority (STA).** The STA is the "local planning organization" (LPO) responsible for providing a planning function similar to the MTC but on a "sub-regional" or countywide basis. This agency prepares and implements a comprehensive countywide transportation plan and coordinates the transportation efforts of Solano County cities with MTC. Most funding decisions are recommendations to MTC. Depending on the requirements of the particular programs, STA may have the authority to directly approve a city's funding request in certain areas. STA is also Solano County's Congestion Management Agency (CMA). As such, STA is responsible for developing standards for traffic service levels, called a Congestion Management Program (CMP), for particular identified roadways in Solano County. In Rio Vista, the CMP roadway is Highway 12.
- **Caltrans.** Caltrans is the state agency responsible for transportation on a statewide level and will work with the City on improvements to Highway 12 within the City.

The City will continue to coordinate with these and other agencies as follows:

- The City will work with the River Delta Unified School District to provide safe crossings and access for school children.
- The City will continue to provide City Council and staff representation on regional transportation planning groups.
- The City will represent the needs of Rio Vista residents to transit providers responsible for carrying out handicapped-access regulations.
- The City will actively support plans to increase the number of inter-city trains and plans for eventual commuter service with connections to BART and other regional transit facilities.
- The City will participate in County and regional transportation planning efforts.

CM-9 LOCAL, STATE, AND FEDERAL FUNDS
(Existing)

Local sources of funding include redevelopment tax increment funding, the creation of an assessment district, and park development funds. Other sources of funding may include, but not be limited to Transportation Equity Act (TEA) transportation funds, State Transportation Improvement Program (STIP), federal air quality funds, California Coastal Conservancy, State Parkland Bond monies, and the California Department of Boating and Waterways. In the past, the City has used these funding sources to construct roadway and waterway improvements.

CM-10 DEVELOPMENT AGREEMENTS
(Existing)

Where appropriate, the City will use the development agreement process established under State law and the Zoning Ordinance to ensure that developers of major new neighborhoods comply with the policies of this General Plan and to establish other benefits to the City in exchange for land use entitlement guarantees for developers and property owners.

CM-11 PUBLIC/PRIVATE COOPERATION
(Existing)

The City will coordinate with private transportation providers to develop innovative methods for running needed shuttle services in Rio Vista. The City also will involve developers and program managers of the Trilogy development in coordinating public and private transit opportunities for mutual benefit. The City may provide incentives to: (1) increase the availability of transportation services to areas within the City, and (2) provide access to critical services (e.g., medical facilities) that are not available in Rio Vista and require travel to other cities in Solano County.

The City will encourage existing businesses to install bicycle racks. Since bicyclists are the best source of information about where improvements to the bicycle system are needed, the City should consult them to obtain recommendations for improvements and to help develop proposals for state and federal funding of bicycle projects.

CM-12 TRAILS AND PATHWAYS MAP
(To be adopted as part of this General Plan)

The City will implement the Trails and Pathways Map as shown in *Figure 8-4*, which requires new development to include bikeways that connect to or become a part of the pedestrian and bicycle system, wherever feasible. The Park and Recreation Commission will review the plan periodically and advise staff and the City Council on needed improvements.

CM-13 COUNTYWIDE BICYCLE PLAN
(Existing)

To reduce consumption of non-renewable energy sources and to improve air quality, the City will integrate its Trails and Pathways Map as shown in *Figure 8-4* with the recently adopted *Solano Countywide Bicycle Plan* (Alta Transportation Consulting, 2000). This action also will further encourage the use of alternative modes of transportation. (Also see Policy RCM-21 in the *Resource Conservation & Management element*.)

CM-14 **ASSESSMENT DISTRICTS**
(Proposed)

If new development creates the need for an arterial street or intersection improvement prior to the development of the parcels adjacent to that improvement, the City may use an assessment district as a funding source for these improvements. Assessment districts also may be used for bikeways and trail maintenance within subdivisions.

CM-15 **BIKEWAYS AND TRAILS MAINTENANCE PROGRAM**
(Proposed)

Under the supervision of the City's Public Works Director, City staff regularly will maintain bikeways and trails and bicycle facilities. Maintenance areas may include some trails that are funded through assessment districts.

CM-16 **PUBLIC EDUCATION AND OUTREACH**
(Proposed)

The City will create and distribute maps of Rio Vista's bicycle system and information about bicycle safety through newspapers and other publications at City buildings, schools, street fairs, and special events. The City will continue and expand the Rio Vista Police Department's role in bicycle education and safety.

CM-17 **NEIGHBORHOOD IMPROVEMENT PROGRAM**
(Proposed)

The City will create a Neighborhood Improvement Program to determine appropriate traffic-calming measures in neighborhoods with traffic issues. The City should structure the program in such a way that ensures participation of residents, property owners, city departments, schools, and other stakeholders. The City will work with neighborhoods and businesses to decide (1) where curbs, gutters, and sidewalks are needed on unimproved local streets; and (2) payment methods for improving and replacing facilities.

Several roadway design options are described on the following page.

Roadway Design within the City Limits

Entries

- Center island with landscaping to slow traffic entering street and deter through-traffic.
- “Bulb-outs” with landscaping at corners to slow traffic entering the street and deter through-traffic.
- “Gateway” markers on bulb-outs to announce neighborhood entrance and slow or deter through-traffic.

Sidewalks

- Separated sidewalks and pathways as shown in *Figures 8-6 through 8-11*.
- Street trees in landscaped parkways that separate sidewalks from curbs.

Traffic-Calming Measures

Closure

- Partial closure one-way with landscaped “bulb-outs.”
- Complete closure with landscaped cul-de-sac.
- Partial closure one-way with flexible “knock-down” bollards.

Diverter

- A diverter is a closure or obstacle that channels traffic to preferred routes.

CM-18 TRANSPORTATION DEVELOPMENT ACT (Existing)

It is in the interest of the State that funds available for transit development are fully expended. Such funds may be expended for physical improvement to improve the movement of transit vehicles, the comfort of the patrons, and the exchange of patrons from one transportation mode to another. The California Government Code incorporates the intent of the Transportation Development Act and provides for the allocation of monies from the Local Transportation Fund (LTF) to cities and counties for these purposes. Monies from the LTF help finance transit services and transportation projects in Rio Vista.

CM-19 TRANSPORTATION SYSTEMS MANAGEMENT (Proposed)

The City will implement Transportation Systems Management (TSM) to improve the efficiency of its existing transportation systems. TSM is oriented toward making better use of existing transportation facilities through short-term, low-cost improvements that are easier to implement than system development modifications—such as roadway construction. A key element in the City’s implementation of its TSM plan is the dissemination of information to employers and employees concerning existing transit and rideshare options for trips between home and work.

The City’s TSM plan will involve the implementation of Transportation Demand Management (TDM) and Transportation Control Measures (TCMs). TDM uses techniques aimed at reducing traffic congestion. These techniques include the promotion of flexible work schedules, rideshare programs, and expanded transit service. These strategies give employees greater flexibility in travel to and from work, which reduces congestion during peak commute periods.

TCMs are incorporated into state-mandated air quality plans at the regional level. These measures can reduce the quantity of pollutants discharged by motor vehicles through a reduction in the number of single-occupant vehicle trips. TCMs will include not only public transit and ridesharing but also measures such as the use of cleaner-burning automobile fuels, the adoption of local trip-reduction ordinances, the design of highways to mitigate negative air quality impacts, and land use planning to reduce trip distances.

CM-20 ZONING ORDINANCE REVIEW AND UPDATE
(Proposed)

The Zoning Ordinance is one of the primary tools for implementing the General Plan. Zoning is the classification of the City into districts and the description of allowable uses and development standards within each district. The City will review its Zoning Ordinance and amend the ordinance as needed to bring it into conformance with the policies and proposals of this General Plan.

CM-21 SUBDIVISION ORDINANCE REVIEW AND UPDATE
(Proposed)

In accordance with the Subdivision Map Act—Division 2 (Section 664201 et seq.) of the California Government Code, the City has adopted a Subdivision Ordinance to regulate and control the design and improvement of subdivisions, including the requirement for tentative and final maps. The City will review its Subdivision Ordinance and amend the ordinance as needed to bring it into conformance with the policies and proposals of this General Plan.

CM-22 UNIFORM BUILDING CODE
(Existing)

The City Building Inspector will apply the provisions of Title 24 of the Uniform Building Code (UBC) to ensure compliance with the policies and proposals of this General Plan.

CM-23 LOCAL SENSITIVE RESOURCE AREAS MAP
(To be adopted as part of this General Plan)

New development will observe the overlay district contained in the General Plan's Local Sensitive Resource Areas (LSRAs) Map (*refer to Figure 10-2 in the Resource Conservation & Management element*) to determine the appropriate areas for roadways within proposed subdivisions.